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DISEASES CAUSED BY BACTERIA AND FUNGI

DUNN, C. G. (1953). **Effects of some salts on the germicidal action of high voltage cathode rays towards *Micrococcus pyogenes* var. *aureus*.**—*J. Bact.* **66,** 421-423. **3969**

Five ml. samples of an aqueous suspension of *"M. pyogenes* var. *aureus"*, alone and with various metallic and ammonium salts, were exposed for 1 sec. to a beam of high voltage cathode rays giving a dosage of 10,000 roentgen equivalents. The treated samples and controls were diluted to 1 : 100 and sown on agar slopes to determine the lethal action of the irradiation alone, and when combined with the action of the salts.

The lethal effect of the irradiation was enhanced by the presence of 0·5% cadmium or cobalt chloride, and by 5% cobalt or nickel chloride, or aluminium sulphate. At 0·5%, lithium or ferric chloride, and at 5%, lithium or calcium chloride, appeared to afford some protection to the bacteria against the lethal action of the rays. All of the salts used had, when used by themselves, some germicidal action against the test organism.—A.S.

FINCHER, M. G. (1953). **Etiology, prevention and treatment of bovine mastitis.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part II. 122-145. [In English. Author's summary modified.] **3970**

F. described work on the control of bovine mastitis carried out by an organization set up for this purpose in New York State. The commonest contributory factor for streptococcal mastitis appeared to be the faulty use of milking machines. Acute mastitis associated with coliform organisms was observed in 33 out of approximately 25,000 cows. In most cases this form of mastitis responded to combined intramammary and intramuscular streptomycin therapy.—R.M.

AMIOT, R. (1954). Traitement et suppression d'une mammite contagieuse dans une étable par l'emploi d'un autovaccin. **[Autogenous vaccine in the treatment of mastitis in a herd of cattle.]**—*Rec. Méd. vét.* **130,** 305-311. **3971**

The author stated that he had been able to control *Str. agalactiae* mastitis in cattle by means of an autogenous vaccine.—A.S.

DIMITRIJEVIĆ, V. & MEKULJI, E. (1953). Rašire-nost antraksa na Kosovu i Metohiji. **[Incidence of anthrax in Yugoslavia.]**—*Vet. Glasn.* **7,** 610-617. [In Croat. Abst. from French summary.] **3972**

In the regions of Kosovo and Metochia in Serbia, Yugoslavia, there were 596 cases of anthrax in domestic animals and 552 cases in human beings during the period 1948-53. Fifty-four per cent. of the animals affected were sheep. The authors discussed control by vaccination of sheep and cattle and the adequate destruction of affected carcasses.—R.M.

SMITH, H. & KEPPIE, J. (1954). **Observations on experimental anthrax : demonstration of a specific lethal factor produced *in vivo* by *Bacillus anthracis*.** [Correspondence.] —*Nature, Lond.* **173,** 869-870. **3973**

An account of the demonstration, in the plasma of g. pigs dying of anthrax, of a factor which is not only lethal, but also specifically neutralized by anthrax antiserum.

The authors found that infected g. pigs died as a result of bacteraemia, but that death was not the result of mechanical blockage of the circulation, or of a deficiency of oxygen in the tissues of the host. Raised haematocrit values and total blood nitrogen, lowered plasma protein, the presence of anuria, delayed clotting of the blood, and terminal collapse with subnormal temperatures (85°–89°F.), together with other histological evidence, gave grounds for a working hypothesis that the animals died in a state of shock. This agrees with the known oedematous and haemorrhagic nature of anthrax and with the fact that g. pigs in which bacteraemia has been arrested by streptomycin have acute renal failure.

The authors re-examined the distribution and activity of the tissue-damaging factor, using a filtered heparinized plasma from g. pigs dying of anthrax, which was much more active than the plasma exudate used in former work [*V.B.* **24,** 975]. The i/d inj. of 0·2 ml. of heparinized plasma produced an extensive area of oedema and congestion. Tests on plasma samples taken at intervals during the development of bacteraemia showed that tissue-damaging activity increased regularly with the increase in the number of bacilli. Anthrax antiserum completely neutralized the skin reaction.—A.S.

Bailey, W. W. (1954). **Antibiotic therapy in anthrax.**—*J. Amer. vet. med. Ass.* **124,** 296-300. **3974**

Out of 6,480 cattle and 51 horses vaccinated with a commercial anthrax vaccine, 208 cattle and 6 horses developed anthrax between 30 days and 6 months after injection. They were treated with penicillin alone, penicillin with terramycin, or terramycin alone. Terramycin gave the best results.—A.S.

Kolb, R. W., Schneiter, R., Floyd, E. P. & Byers, D. H. (1952). **Disinfective action of methyl bromide, methanol, and hydrogen bromide on anthrax spores.**—*Arch. industr. Hyg.* **5,** 354-364. **3975**

Anthrax spores in rolls of hair and bristles were killed by exposure for 18 hours at room temp. to gaseous methyl bromide at a conc. of 3·4–3·9 g. per l. of air, provided that moisture was present. This procedure caused no apparent damage to the material treated. Neither hydrogen bromide nor methyl alcohol was as effective as methyl bromide.—R.M.

Staub, A. & Virat, B. (1954). Nouvelle formule de vaccin contre le charbon bactéridien. [**An anthrax vaccine.**]—*C. R. Acad. Sci., Paris.* **238,** 748-749. **3976**

The authors prepared a live vaccine from an attenuated form of *B. anthracis,* using as an adjuvant quinine dichlorhydride instead of the more usual saponin. When it was used on sheep and goats a hard nodule developed at the site of inoculation, and the animals were subsequently immune to a moderate lethal dose which killed controls in two and a half days. The vaccine has been used successfully on 471,000 sheep, goats and horses, and 141,000 cattle.—A.S.

Fincher, M. G., Evans, W. M. & Saunders, L. Z. (1954). **Avian tuberculosis in a dairy cow.**—*Cornell Vet.* **44,** 240-252. [Authors' summary modified.] **3977**

A 3-year old Guernsey cow with a persistent vaginal discharge was slaughtered in 1948 because of paresis. Lesions of TB. were present in the cerebral and spinal meninges and in the uterus. Numerous acid-fast bacilli were seen in smears of these organs, and avian type *M. tuberculosis* was isolated from the uterus. The cow had been pastured on a meadow fertilised with poultry manure. Several other cattle in the herd reacted to avian type tuberculin, but no further cases of TB. had occurred up to Dec., 1953. The authors stated that avian type TB. of the uterus had not previously been reported in cattle in the U.S.A. The herd was free from Johne's disease.

Hirato, K. & Shimizu, K. (1953). [**Bacteriological studies on the no-lesion reactors in Hokkaido. I. Isolation of the human type of tubercle bacilli. II. Result of observation in 1952.**]—*Vet. Res., Japan.* **1,** 1-10 & 148-156. [In Japanese. Abst. from English summaries.] **3978**

Out of 63,000 cattle tuberculin tested in 1951 and 70,000 in 1952 there was a total of 33 reactors in which no lesions of TB. were found at P.M. examination. Human type tubercle bacilli were obtained by culture from the lymph nodes of 6 of them. Bovine type bacilli were not isolated. In most cases there was a history of direct contact with tuberculous human beings.—R.M.

Anon. (1954). **That long last mile in bovine tuberculosis eradication.**—*J. Amer vet. med. Ass.* **124,** 319-320. **3979**

A note on the present position of TB. control in the U.S.A. In spite of the enormous scale of the campaign and the magnificent results achieved there was a danger that apathy might hinder the final stages and perhaps prevent the attainment of complete eradication.

The new budget of the Department of Agriculture was still under debate; it made no provision for the compensation of farmers who sent reactor cattle for slaughter.—A.S.

Elian, A., El-Affify, A. & Zaki, O. A. (1953). **The incidence and typing of tuberculosis in swine in Egypt.**—*J. Egypt. med. Ass.* **36,** 723 - 727. [Abst. from authors' summary.] **3980**

Out of 3,143 pigs slaughtered in Cairo, lesions resembling TB. were found in the head in 57 and in the lungs in 5. In 5 pigs *Corynebacterium equi* was isolated from the

submaxillary lymph nodes. In the remaining pigs *Mycobact. tuberculosis* was isolated: in 60% of them human type bacilli, in 24% bovine type, and in 16% avian type.—R.M.

PATNODE, R. A. (1954). **Tissue fatty acids and their possible relationship to the natural resistance of rabbits to infection with human-type tubercle bacilli.** — *Amer. Rev. Tuberc.* **69,** 710-723. [French and Spanish summaries.] **3981**

Rabbits are highly resistant to human-type tubercle bacilli and extremely susceptible to the bovine type. Water-soluble and phospholipoid fractions of normal rabbit lung are growth-supporting for both strains; an acetone-soluble fraction is inhibitory, but more for the human than the bovine type. The active components of this fraction are fatty acids. Using rabbit lung phospholipoid as substrate, phospholipase activity cannot be demonstrated in culture filtrates or homogeneous suspensions of the H37Rv and Ravenel strains. Normal rabbit lung tissue possesses readily detectable phospholipase activity.—W. R. BETT.

HART, P. D'ARCY & REES, R. J. W. (1954). **Changes in morphology of an avirulent strain of *Mycobacterium tuberculosis* under the influence of non-ionic surface-active agents.**— *J. gen. Microbiol.* **10,** 150-159. **3982**

When the avirulent strain of *M. tuberculosis* H37Ra was repeatedly subcultured in a liquid medium containing low concentrations of "Triton A20" (a solution of a polymeric *p-iso*octyl polyoxyethylene phenol) and other chemically similar non-ionic surface-active polyoxyethylene ethers, the morphology changed from the amorphous growth pattern characteristic of avirulent tubercle bacilli to the formation of microscopic 'cords' similar to those shown by virulent strains such as H37Rv.—R.M.

FRITZSCHE, K. (1953). Ein Beitrag zur BCG-Schutzimpfung bei Kälbern. **[B.C.G. vaccination of calves.]** — *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. 123-128. Discussion: Part II. pp. 191-192. [In German. English and French summaries.] **3983**

[See also *V.B.* **24,** 2201.] In discussing this paper 3 speakers stated that TB. in cattle is best controlled by methods other than vaccination of calves.—R.M.

HAUDUROY, P. & TANNER, F. (1954). Demonstration expérimentale des formes filtrantes de certaines mycobactéries. **[Experimental demonstration of filtrable forms of certain mycobacteria.]** — *C. R. Acad. Sci., Paris.* **238,** 1171-1172. **3984**

The authors described a method of obtaining *M. johnei* in filtrable form by the use of strain-specific bacteriophages. After filtration the clear filtrate was sown on mannitol-litmus agar, on which it gave growth "identical with that obtained with the filtrable forms of other germs." This was pricked out and cultured alternately in broth and on agar. With time dwarf cells appeared and, at about the 20th culture, altogether normal cells. The "reconstituted" strain was as sensitive to bacteriophage as the original strain.—A.S.

EGHBAL, M., RAFYI, A., MIR CHAMSY, H. & FARVAR, B. (1953). A propos d'un cas de morve humaine guéri par les sulfamides. Evolution vers la résistance aux sulfamides du bacille morveux au cours du traitement. **[Successful treatment with sulphonamides of glanders in a human being. Development of resistance to sulphonamides during treatment.]**—*Pr. méd.* **61,** 1535-1536. **3985**

A groom aged 40 was successfully treated for glanders with sulphonamides, having been given sulphathiazole, sulphadiazine and also "sulfatriad" and "tetrasulfamide" (the latter being formulations containing mixtures of certain sulphonamides), in combination with "anamorve" (a formolized culture). The authors stated that two different strains of the glanders bacillus were isolated from this case. They were both resistant to penicillin but sensitive to streptomycin, chloramphenicol, aureomycin and terramycin, but they stated that these antibiotics had no therapeutic action in the experimental infection in the g. pig. One strain was sensitive to sulphadiazine while the other was not, but it was not curative in infected g. pigs, which were, however, cured with "tetrasulfamide."—W. R. BETT.

MÜLLER, F. (1954). Die Rotlaufdiagnose bei der bakteriologischen Fleischuntersuchung. **[Diagnosis of swine erysipelas at meat inspection.]** — *Berl. Münch. tierärztl. Wschr.* **67,** 189-192. [English summary] **3986**

Out of 15,894 pigs slaughtered in emergency and examined bacteriologically, 4,139 had *Erysipelothrix rhusiopathiae* infection. Positive swabs were found in the musculature and organs of 1,829, in several organs in 1,563, in the kidney only in 336, in the spleen only in 280, in the liver only in 84, in the lymph nodes only in 20, and in the musculature only in 16. —M. SACHS.

SHUMAN, R. D. (1954). **Experimental evaluation of swine erysipelas adsorbate bacterin.** — *J. Amer. vet. med. Ass.* **124,** 362-367. **3987**

S. evaluated two experimental swine erysipelas killed culture vaccines (E and F).

In mouse tests E gave complete protection at a diln. of 1:32 and, at 1:64, 90% immunity to a challenge dose of 200 LD^{50} given by scarification. F in similar tests gave 100% protection at a diln. of 1:4, but only 30% protection at 1:64.

In tests on very small batches of young weaned pigs with E the protection waned quickly after one month; F gave unsatisfactory results.—A.S.

CANDOLIN, Y. (1953). **Seal finger (spekkfinger) and its occurrence in the Gulfs of the Baltic sea.**—*Acta chir. scand.* Suppl. 177, pp. 51. [In English.] **3988**

C. first encountered seal finger in 1939 in Finland. He was interested in erysipeloid; at first he thought that this was a variant of that infection, but he now states that it is a different affection. He has extensive experience of seal finger, having travelled throughout the Gulf of Bothnia and Gulf of Finland in order to make personal enquiries about it. In addition he has corresponded with likely persons in all the countries in which seal hunting is undertaken.

He gives a table showing an elaborate classification of the details of 245 cases that he has traced.

Considerable detail is given about the circumstances in which the disease occurs, its clinical nature, the period of incubation, diagnosis and treatment.

The section on aetiology is disappointing. *Erysipelothrix rhusiopathiae* is not referred to anywhere in this monograph; presumably as C. emphasizes his acquaintance with erysipeloid he knows about the role of that organism. He refers to the micrococci that have been isolated by certain authors from cases of "seal finger," but gives little detail. The section dealing with micro-organisms isolated from cases of the disease covers about a page and a quarter and should surely have been much more complete. Under the heading "Aetiology," C. dealt with species of seals and with vitamin deficiency.

He states that the causal agent of seal finger is unknown and emphasizes the need for more research. He considers that this disease is so important to those in the seal catching industry that great care should be taken to protect the hands as far as possible by wearing gloves when convenient, by keeping the hands clean and by giving attention to all abrasions and wounds.

DAVIS, D. H. S. (1953). **Plague in South Africa: a study of the epizootic cycle in gerbils (*Tatera brantsi*) in the Northern Orange Free State.** — *J. Hyg., Camb.* **51,** 427-449. **3989**

D. observed the course of an epidemic of *Pasteurella pestis* infection in 34 gerbil (*T. brantsi*) colonies in South Africa. Regular censuses of 21 colonies which survived to the last phase of the epidemic revealed a population of 420 in June 1940, falling to *nil* in Jan. 1941. The time of year did not influence the course of the epidemic. He stated that gerbils act as a reservoir of infection, for the semi-domestic multimammate mouse (*Mastomys natalensis*), which communicates infection to domestic rats (*R. rattus*), by the fleas of which infection is transmitted to man. Vlei rats (*Otomys orroratus*) were also infected by contact with *Mastomys* and formed a secondary reservoir of infection.

Plague-infected fleas were found alive in blocked deserted gerbil burrows for up to 120 days.—A.S.

WEED, L. L. & LONGFELLOW, D. (1954). **Morphological and biochemical changes induced by copper in a population of *Escherichia coli*.** —*J. Bact.* **67,** 27-33. [Authors' summary slightly modified.] **3990**

The presence of small amounts of copper ions in a liquid synthetic medium inoculated with *Bact. coli* resulted in the appearance of a small colony variant. The changes noted persisted in the absence of Cu. The variant possessed significant differences in lactose, glucose, and nucleic acid metabolism as well as increased resistance to ultra-violet irradiation when compared with normal *Bact. coli*.—R.M.

HOWARTH, J. A., CORDY, D. R. & BITTLE, J. (1954). ***Salmonella bredeney* infection of calves and prophylaxis with chloromycetin and streptomycin.**—*J. Amer. vet. med. Ass.* **124,** 43-46. **3991**

Chloramphenicol therapy is valuable routine prophylaxis for calves likely to be carrying *S. bredeney*, daily doses up to 1·5 g. being given orally. Intravenous use is advised in stubborn cases. Streptomycin is of doubtful value.

—F. R. PAULSEN.

BRUHN, P. A. (1953). **On the probability of total eradication of brucellosis in Denmark.** —*Proc. XVth Int. vet. Congr., Stockholm,*

1953. Part I. Vol. 1. pp. 105-111. Part II. pp. 184-190. [In English. French and German summaries.] **3992**

[See also *V.B.* **24**, 1014.] In Part II of the *Proceedings*, B. gave graphs illustrating the number of herds registered as being free from brucella infection, the incidence of antibodies in the serum of cattle, and the progress of control measures in Denmark.—R.M.

KOMYAKOVICH, V. Y. (1954). **[An experiment in treating *Brucella* infection.]**—*Veterinariya, Moscow.* **31**, No. 5. p. 34. [In Russian.] **3993**

K. described the organization of an isolation unit for cows reacting positively for brucellosis. The emphasis was on open air, suitable food and suitable cleanliness. K. stated that within two years almost all the animals treated in this unit had become negative reactors and many had given birth to healthy calves.—A. MAYR-HARTING.

SCHMID, G. & KLINGLER, K. (1953). Bakteriologische und serologische Untersuchungen über die Brucella-Gruppe. **[Bacteriological and serological investigations into the brucella group.]**—*Proc. XVth Int. vet. Congr., Stockholm*, 1953. Part I. Vol. 1. pp. 85-87. Part II. pp. 171-177. [In German. English and French summaries.] **3994**

The authors described their previously published work on blindness in chamois and its relationship to kerato-conjunctivitis and brucellosis of cattle and sheep, which has been published previously. [See *V.B.* **23**, 2478 and following abst.]—R.M.

I. KLINGLER, K. (1954). Sind die Kerato-Konjunctivitis-Erreger zu den Brucellen zu rechnen? (Stellungnahme zu den Bemerkungen von G. Renoux.) **[Is the causal agent of infectious kerato-conjunctivitis of ruminants a brucella?]**—*Schweiz. Arch. Tierheilk.* **96**, 79-85. [English, French and Italian summaries.] **3995**

II. RENOUX, G. (1954). A propos d'un article intitulé " Über die Gemsblindheit und ihre Beziehungen zur Konjunktivo-Keratitis infectiosa und zur Brucellose der Rinder und Schafe " (K. Klingler). **[Comments on the article by Klingler entitled " blindness in chamois and its relation to infectious kerato-conjunctivitis of cattle and sheep ".]**—*Ibid.* 74-79. [In French. English, German and Italian summaries.] **3996**

I. A continuation of a paper [*V.B.* **23**, 2478] in which K. claimed that the cause of blindness in chamois and keratoconjunctivitis in cattle is a brucella organism. He discussed briefly the results of agglutination tests and animal inoculation tests and discussed similarities between the genera *Brucella, Haemophilus*, and *Proteus*.

II. R. criticised Klingler's claim [see preceding abst.] that a brucella organism is responsible for the disease. He had found that the organisms described by K. belonged to the genus *Proteus*. He questioned the value of the agglutination tests quoted by K.—A.S.

I. HERZBERG, M. & ELBERG, S. (1953). **Immunization against brucella infection. Isolation and characterization of a streptomycin-dependent mutant.** — *J. Bact.* **66**, 585-599. **3997**

II. HERZBERG, M., ELBERG, S. & MEYER, K. F. (1953). **Immunization against brucella infection. II. Effectiveness of a streptomycin-dependent strain of *Brucella melitensis*.**—*Ibid.* 600-605. **3998**

The authors isolated a strain of *Br. melitensis*, which, *in vitro* was dependent for its growth on the presence of streptomycin. The strain was avirulent for g. pigs, mice and rhesus monkeys, but its growth in these hosts was not enhanced by the administration of streptomycin.

II. A report of study on the capacity of the above-mentioned strain to protect mice and g. pigs against experimental infection with virulent *Br. melitensis*. Good immunity was produced in mice by two inoculations at an interval of 3 weeks; one inoculation produced only slight immunity. The administration of streptomycin to mice during the development of immunity had no effect on the level of immunity achieved. In g. pigs even 3 inoculations produced only slight immunity.—A.S.

BURKI, F. & FEY, H. (1953). Blockingtest und modifizierter Coombstest in der Serodiagnostik der menschlichen Brucellosen. **[Blocking test and modified Coombs test in the serological diagnosis of human brucellosis.]**—*Schweiz. Z. allg. Path.* **16**, 945-954. [English and French summaries. English summary modified.] **3999**

Using a blocking test and a modified Coombs test, the technique of which they described, the authors demonstrated blocking (incomplete, hyperimmune) antibodies in sera from human cases of brucellosis. Among 219 sera examined, 20 had agglutinin titres of 1 : 80 or more without a prozone; in 18 there was agglutination with a prozone; 19 non-agglutinating sera gave a positive reaction to the Coombs test and with one exception a positive reaction to the blocking test. The authors there-

fore recommended the use of these tests in cases in human beings with clin. symptoms suggestive of brucellosis, but in which the agglutination test is negative.

CAMERON, H. S. & MEYER, M. E. (1954). **Comparative metabolic studies on the genus brucella. II. Metabolism of amino acids that occur in the urea cycle.**—*J. Bact.* **67,** 34-40. [Authors' summary slightly modified.] **4000**

Using conventional Warburg and paper chromatography techniques, the authors determined the metabolic activity of washed cells of the three species of *Brucella* on substrates of amino acids that may participate in the urea cycle. *Br. suis* differed significantly from *Br. abortus* and *Br. melitensis* in its oxidative and synthetic abilities, particularly on substrates of L-glutamic acid and D-alanine. To a lesser extent differences in metabolic activity also occurred between *Br. abortus* and *Br. melitensis*.

VAGNI, O., MASCARO, L. A. & VILLEGAS, C. (1954). Relación de causa entre la infección leptospirósica y la irido-ciclo-coroiditis de los caballos. **[Relationship between leptospirosis and equine periodic ophthalmia.]**—*Rev. Vet. milit., B. Aires.* **2,** No. 4. pp. 19-21. **4001**

Out of 8 horses in Argentina with chronic periodic ophthalmia, antibodies against *L. pomona* or *L. icterohaemorrhagiae* were present in 5. The sera of 2 out of 11 healthy horses and of 3 out of 4 horses with ulcerative lymphangitis were also positive.—R.M.

GOCHENOUR, W. S., JR. (1953). **Bovine leptospirosis in the United States.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part II. pp. 153-157. [In English. French and German summaries.] **4002**

A general account.—R.M.

MOBERG, K. (1953). Ueber die Feststellung und Bekämpfung des Botulismus beim Nerz in Schweden. **[Botulism in mink.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 62-64. Discussion: Part II. pp. 166-167. [In German. English and French summaries.] **4003**

[See also *V.B.* **24,** 361.] M. supplemented his paper by giving latest figures for the incidence of botulism in mink in Sweden. In the years 1951, 1952 and 1953 a total of 350,000 mink were vaccinated against botulism.—R.M.

EDWARDS, E. D. (1954). **Foot-rot and necrotic ulcer diseases in pigs.**—*N.Z. J. Agric.* **88,** 11 & 13-14. **4004**

E. described the effects of various housing and management factors on the incidence of foot rot in pigs: concrete floors were a major predisposing cause. He outlined preventive measures.—C. A. E. BRIGGS.

TERPSTRA, J. I. (1953). **A case of "enzootic sterility" (*Vibrio fetus*: pleuropneumonia-like organisms).** — *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 2. pp. 811-816. Discussion: Part II. pp. 345-346. [In English. French and German summaries.] **4005**

In discussing T.'s paper [*V.B.* **24,** 67], two speakers described their experiences in the diagnosis of suspected *V. fetus* infection in cattle.—R.M.

HURD, R. C. & DRAKE, C. H. (1953). ***Candida albicans* infections in actively and passively immunized animals.**—*Mycopathologia.* **6,** 290-297. [In English; French summary.] **4006**

In general, the results of this investigation to study the effects of antiserum on the course of *C. albicans* infection in experimentally infected rabbits showed passive and active immunization to be ineffective, or even deleterious, as shown by tests on animals with minimum lethal doses of a suspension of *C. albicans*.

Immunization did, however, appear to have some effect on the morphology of the pathogen which exhibited multibranched mycelium, thick-walled distorted blastospores, and, a very rare occurence in *C. albicans in vivo,* the presence of actinomycetoid-like granules.—G. C. AINSWORTH.

MENGES, R. W. (1954). **Histoplasmin sensitivity in animals.**—*Cornell Vet.* **44,** 21-31. **4007**

Histoplasmin skin testing of farm animals in Kansas, Missouri, and Iowa showed sensitivity rates of 148/2,752 (5%) positive for cattle, 32/44 (73%) for horses, 92/279 (33%) for sheep, 2/129 (2%) for pigs, 1/98 (1%) for fowls and 0/25 for 5-month-old turkeys. Fourteen of 102 (14%) dogs tested in Kansas and Missouri gave a positive reaction and 5 reactors were found among 26 dogs (19%) associated with cases of histoplasmosis in man or dogs. Mice and hamsters experimentally inoculated with spores of *H. capsulatum* failed to develop a positive skin reaction.

The evidence obtained is taken to suggest that the disease is not transmitted from animals to man, but that both man and animals are exposed to a reservoir of infection in the soil.

—G. C. AINSWORTH.

DATTA, S. (1952/53/54). **Chronic bovine haematuria.**—*Indian vet. J.* **29,** 187-209; **30,**

1-33; 96-119; 177-189; 289-301; & 388-406. **4008**

D. reviewed the literature and examined the world distribution of bovine chronic haematuria, gave a general account of the disease, and recorded the results of his own investigations. He considered that the cause is a fungus of the *Aspergillus flavus* type and claimed to have observed it in lesions of the urinary bladder and several other organs of affected cattle, and to have recovered it culturally not only from lesions but also from bracken fern *Pteris aquilina* and the lichens *Usnea subsordida, Parmelia reticulata* and *P. Camtschadalis* from localities where the disease is endemic. He further claimed to have reproduced haematuria in 2 of 12 bulls injected subcutaneously with urinary sediment, and in a calf dosed *per os* with urine, from animals in the "active stage of haematuria."—R. N. Mohan.

Beneke, E. S. (1953). **Detection of mycotic infection in animals.**—*Mich. St. Coll. Vet.* **13,** 219-231. **4009**

A conventional account of fungous infections of animals, giving a brief summary of reported cases with 60 references and 15 photomicrographs.—A. Seaman.

Sheriff, D. & Piercy, S. E. (1953). **Further observations on an avianized bovine pleuropneumonia vaccine in Kenya.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 333-338. Discussion: Part II. pp. 236-237. [In English. French and German summaries.] **4010**

S. E. Piercy, as joint author, supplemented the paper given in Part I of the *Proceedings* [*V.B.* **24,** 1433] with remarks on the reaction of cattle to the avianized vaccine described, and the method of preparation and testing of the vaccine.—R.M.

Florent, A. (1953). Les borrelomycétacées ou organismes du type péripneumonia (pleuropneumonia like organisms) au niveau de l'appareil génital de la bête bovine—culture sur oeuf embryonné de poulet. **[Pleuropneumonia-like organisms in the genital tract of cattle: culture on the chick embryo.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. 354-359. Discussion: Part II. pp. 242-243. [In French. English and German summaries.] **4011**

In Part II of the *Proceedings,* F. supplemented his paper [*V.B.* **24,** 1444] with observations on the extent of infection with apparently saprophytic pleuropneumonia-like organisms in an experimental herd of 28 heifers and one bull. —R.M.

Wilson, M. K. & Briggs, C. A. E. (1954). **The normal flora of the bovine rumen I.—Bacteriological methods for quantitative studies.**—*Vet. Rec.* **66,** 187-188. **4012**

In this preliminary report the authors described the use of 'reinforced clostridial medium' buffered with $NaHCO_3$ and saturated with CO_2, and serial dilution counts made directly in the culture medium, in quantitative studies of the normal bovine rumen flora. The total viable population fluctuated between 10^8 and 10^{11} organisms per g. of rumen contents, and these limits also applied under widely differing conditions of diet; this was of importance since other workers had frequently regarded much smaller numerical changes to be indicative of significant major alteration in the flora.

Preuner, R., von Prittwitz und Gaffron, J. & Tronnier, A. (1954). Untersuchungen zur Feinstruktur ruhender Bacillensporen. **[Minute structure of resting bacterial spores.]**—*Z. Hyg. InfektKr.* **138,** 309-320. **4013**

Resting spores contain peripheral Feulgen-positive bodies identical with Piekarski's nucleoids. After intensive application of ultraviolet light followed by *N*.HCl at room temp., vesicular bodies are shot out of the spores with lightning speed. They are also identical with Piekarski's nucleoids and have a Gram-fast membrane.—W. R. Bett.

Tomcsik, J. & Guex-Holzer, S. (1954). Genese der komplexen Kapselstruktur. **[Genesis of the complex capsule structure.]**—*Schweiz. Z. allg. Path.* **17,** 221-240. [English and French summaries. English summary copied *verbatim.*] **4014**

D-glutamic acid polypeptide is excreted on the entire surface of the bacterial cell, except in the plane of division between the chain-forming bacilli. The species specific capsular polysaccharide, on the other hand, is produced, in the first stage of capsule formation, only at the site of cell division. The cross wall of the bacterial cell grows outwards, pushing before it the polysaccharide material which was originally contiguous to the cell wall. This results in the formation of a transverse capsular septum, so that each individual bacillus together with its capsular envelope constitutes a separate unit within the chain.

Woods, D. D. (1953). **The integration of research on the nutrition and metabolism of micro-organisms.**—*J. gen. Microbiol.* **9,** 151-173. **4015**

The five levels, defined by Marjory Stephenson, at which research on the nutrition and metabolism of micro-organisms should be carried out, both from the biological and biochemical aspects, were examined and illustrative examples given of how the integration of work at the different levels has advanced our knowledge of the synthetic mechanisms of the cell.—A. Ackroyd.

See also absts. **4080** (spreading of tubercle bacilli by *M. domestica*); **4213-4215** (reports, India); **4217** (book, tropical bacteriology); **4219** (book, endosymbiotic microflora).

DISEASES CAUSED BY PROTOZOAN PARASITES

Wilson, S. G. (1953). **The development of drug resistance in trypanosomes.** — *Proc. XVth Int. vet. Conr., Stockholm,* 1953. Part I. Vol. 1. pp. 12-17. Discussion: Part II. 160-161. [In English. French and German summaries.] **4016**

[See also *V.B.* **24,** 1447.] J. T. R. Evans, discussing W.'s paper described work done in the Sudan on the effectiveness of ethidium bromide and on trypanosomes resistant to either dimidium bromide, ethidium bromide, or quinapyramine sulphate.—R.M.

I. Ballarini, G. (1951). Sul modo di moltiplicazione del *Trichomonas vitulae*—Mazzanti 1900, nel terreno L.E.S.m. **[Mode of multiplication of *Tr. foetus*.]**—*Boll. Soc. ital. Biol. sper.* **27,** 968-971. **4017**

II. Ballarini, G. (1951). Glicogeno endocellulare e variazioni della sostanza riducenti del mezzo colturale di un ceppo di *Trichomonas vitulae*—Mazzanti 1900, coltivato in purezza su L.E.S.m. **[Relationships between endocellular glycogen in *Tr. foetus* and the amount of reducing substances in the culture medium.]**—*Ibid.* 977-980. **4018**

III. Ballarini, G. (1951). Ulteriore contributo sulle variazioni del pH nel mestruo di L.E.S.m. in cui coltiva in purezza il *Trichomonas vitulae* Mazzanti 1900. **[Variation in pH in cultures of *Tr. foetus*.]** — *Ibid.* 1657-1660. **4019**

I. B. counted the number of *Tr. foetus* present in pure cultures at intervals for up to 250 hours' incubation at 37°C. The initial conc. was either 68 or 685 organisms per cu. mm. In both cases max. conc. (6,000–7,000 organisms per cu. mm.) was attained after 60–111 hours' incubation. Thereafter the conc. decreased until, after 200 hours, there were no motile organisms in the cultures.

II. The amount of intracellular glycogen in *Tr. foetus,* as revealed by histochemical examination, was greatest at the stage of max. multiplication of the organism, and was approx. inversely proportional to the amount of reducing substances (consisting mainly of glucose) present in the culture medium.

III. Increase in the acidity of pure cultures of *Tr. foetus* seemed to be associated with the multiplication of the organisms, but acidity was not essential for normal growth and, up to pH 5–5·1, did not interfere with normal growth.

—R.M.

Babcock, W. E. & Dickinson, E. M. (1954). **Coccidial immunity studies in chickens. II. The dosage of *Eimeria tenella* and time required for immunity to develop in chickens.** —*Poult. Sci.* **33,** 596-601. [Authors' summary modified.] **4020**

An account of 11 experimental trials, utilizing 921 chickens, to secure data on factors of dosage and time in the production of immunity to *E. tenella* infection.

Time required for production of immunity was 4 days longer for a total dosage of 1,050 sporulated oocysts than for a total dosage of 2,125. A dosage of 1,600 sporulated oocysts when properly administered produced a practical immunity that withstood severe challenge. The number of individual doses required to make up this total dosage did not materially affect the immunity produced. The activity of a culture decreased as its age increased. Reduced pathogenicity was observed in a culture 236 days old, and reduced immunogenicity when it was 344 days old.

The minimum time required for the production of immunity from a standard immunizing procedure (600 oocysts first day, 1,000 oocysts second day) was 6 days with a culture more than 300 days old, and 3 days with a culture less than 150 days old.

Pellérdy, L. & Babos, A. (1953). Zur Frage der Misserfolge mit der Sulfonamidtherapie der Blinddarmkokzidiose. **[Sulphonamide resistant strains in avian coccidiosis.]**—*Acta vet. hung.* **3,** 207-210. [In German. Russian summary.] **4021**

To prove that intercurrent disease explains

apparent sulphonamide resistance in coccidiosis, 66 fowl typhoid infected chickens were inoculated with a supposedly sulphonamide-resistant strain of *Eimeria tenella*. Those in one group were given sulphonamide, the remainder being untreated controls. All the chickens died: 10 of the 40 in the control group were diagnosed at P.M. examination as caecal coccidiosis as compared with only one of the 26 in the sulphonamide treated group.—E. J. L. Soulsby.

Cordier, G. & Gayot, G. (1954). Recherches sur la theilériose à *Theileria dispar*. I. Insuccès de la thérapeutique curative par l'auréomycine. [*Th. dispar* **infection in cattle. I. Failure of treatment with aureomycin.**]—*Rec. méd. vét.* **130,** 429-433. **4022**

Gayot, G., Pellier, M. & Kovalenko, C. (1954). Recherches sur la theilériose à *Theileria dispar*. II. Étude de quelques constantes sériques et plus particulièrement du calcium au cours de la theilériose. [**Research on *Th. dispar* infection. II. Urea and calcium content of the serum of infected cattle.**]—*Ibid.* 497-499. **4023**

I. Aureomycin i/v in doses from 10 to 50 g. failed to arrest death in four naturally occurring cases of theileriasis. There was a temporary reduction in body temp.

II. The level of urea and calcium in the blood of cattle with *Th. dispar* infection was determined. A hypocalcaemia was noted and it was not curable by injections of camphosulphonate of calcium.—Jas. G. O'Sullivan.

Tsalacopoulos, A. (1954). Prémunition des bovins contre l'anaplasmose. Prémunitions par *Anaplasma centrale* réalisées par le Service Vétérinaire du Comité Spécial du Katanga au Lomami. [**Immunization of cattle against anaplasmosis using *A. centrale*.**]—*Bull. agric. Congo belge.* **45,** 721-730. [In French. Flemish summary.] **4024**

Three calves which, before and after splenectomy, were free from *A. marginale*, were inoculated with *A. centrale*, the inoculum also containing *Theileria mutans*. When 8,456 cattle were given blood from these calves, all were protected against infection with *A. marginale*.

—Jas. G. O'Sullivan.

Borg, K. (1953). **Toxoplasmosis in hares and capercaillie in Sweden during the years 1948-1952.**—*Proc. XVth Int. vet. Conr., Stockholm,* 1953. Part I. Vol. 1. pp. 406-409. Discussion: Part II. pp. 249-250. [In English. French and German summaries.] **4025**

In discussing B.'s paper (*V.B.* **24,** 2316), four speakers briefly commented on the occurrence of *Toxoplasma* infection in various mammals and birds.—R.M.

See also absts. **4081-4084** (Tsetse fly control); **4213-4215** (reports, India).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Great Britain. (1954). **Report of the Departmental Committee on Foot-and-Mouth Disease 1952-1954.** pp. 151. London: H.M. Stat. Off. 5s. 6d. **4026**

As a result of the unusually high incidence of Foot and Mouth Disease in Gt. Britain in 1951 and 1952 the Minister of Agriculture and Fisheries appointed a Departmental Committee "to review the policy and arrangements for dealing with F. & M. disease in Gt. Britain and to advise whether any changes should be made in the light of present scientific knowledge and the technical and administrative experience gained in recent years in this and other countries".

The Committee held 39 meetings in Gt. Britain and received evidence both written and oral from many persons and organizations. It also visited foreign countries, namely France, Switzerland, Belgium, Holland, Denmark, Norway, Sweden, Brazil and Argentina. In these countries a study was made of the methods used for controlling the disease, particularly by vaccination. The Committee's work extended from September 1952 to July 1954.

Chapter I deals with the nature of the disease and with its incidence from 1929 to 1953; chapter II with the causes of primary outbreaks in Gt. Britain and discusses such factors as wild birds, wind-borne infection, imported animals and meat, swill, persons and vehicles, imported hay, straw and vegetables.

In chapter III the methods adopted in the countries which were visited for combating the disease are described in some detail. Chapter IV discusses the policy for dealing with the disease in Gt. Britain and concludes that the choice lies between (a) stamping-out, (b) vaccination, and (c) a combination of the two, and that in a country such as Gt. Britain, where the incidence is normally low, the right policy is stamping-out.

The present arrangements for dealing with the disease in Gt. Britain are fully described in chapter V. Chapter VI consists of a summary of conclusions and recommendations.

In addition there are sixteen appendices, some of which are of great scientific interest, such for example as No. II "The nature of F. & M. disease" by W. M. Henderson, No. VIII "The evidence about the introduction of the disease into Great Britain by birds" by W. W. Wilson, R. C. Matheson and R. Meinertzhagen, and No. XVI "Immunity to F. & M. disease" by I. A. Galloway.

Fifteen separate items are listed in the summary of conclusions and recommendations and consideration of space makes it impossible to discuss them all here, but the following are perhaps of greatest interest.

International collaboration is considered essential for effective control and action by the Government in this direction is advised. Immunity following vaccination cannot be reckoned to be full for more than four months and the possibility of the masking of infection in vaccinated cattle cannot be ignored. The immunization of all cattle in Gt. Britain is considered to be in the realm of phantasy and consequently stamping-out must continue to be the policy in Gt. Britain. However, it is considered that preparations ought to be made for the use of vaccination in the event of any epidemic becoming so widespread that slaughter was no longer practicable or economic.

The work of the Pirbright Research Institute is praised, but further extension would be needed if recourse to vaccination ever became necessary. It is considered that the organization of veterinary research in Gt. Britain is not fully satisfactory and the creation of a Veterinary Research Council similar to the Medical and Agricultural Research Councils is suggested. A number of suggestions are made for modifications in details of the Ministry of Agriculture and Fisheries' control arrangements for dealing with outbreaks. The zeal and efficiency of the Ministry's veterinary staff is praised and it is advised that care be taken to ensure that their conditions of service are such as will continue to attract men of the calibre required for the discharge of their exacting duties.

This report is a most valuable source of information on every aspect of the disease.

—M.C.

ANGELOFF, S. (1952). Über die Bekämpfung der Maul- und Klauenseuche in Bulgarien. **[Control of foot and mouth disease in Bulgaria.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 60-66. **4027**

In 1951, F. & M. disease appeared in Bulgaria near the Greek frontier. Attempts at control were hampered by the fatalistic attitude of the Mohammedan population, and the disease was further spread by nomads. By 1952 the disease was present in 5 areas adjacent to Turkey, Greece and Yugoslavia. Strong control of the movement of livestock, livestock products, and human beings in infected areas was instituted, coupled with isolation of infected animals, disinfection of infected premises and vaccination of in-contact cattle. The outbreak was confined to that part of Bulgaria south of the Balkan Mountains.—R.M.

MÖHLMANN, H. (1953). Gedanken zur praktischen Auswertung des Interferenzphänomens bei der Maul- und Klauenseuche. **[The practical use of the interference phenomenon in foot and mouth disease.]**—*Arch. exp. VetMed.* **7,** 226-237. **4028**

M. discussed the application of the interference phenomenon to the protection of livestock against F. & M. disease, and described experiments carried out on the Island of Riems. Thirty-eight cows, placed in direct contact with infected cattle, did not develop F. & M. disease if, just after arrival on the island and immediately before exposure to infection, they were inoculated with 100 ml. vaccine prepared from the same strain of virus.—R.M.

HENDERSON, W. M. (1953). **The use of virus culture in foot and mouth disease research.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 191-195. Part II. pp. 206-208. [In English. French and German summaries.] **4029**

In Part II of the Proceedings, H. described experiments done since his paper [*V.B.* **24,** 1850] was published. These compared the effectiveness in cattle of vaccines prepared from virus which had been cultured for from 20 to 72 hours. Two strains of virus were used. He also described the decrease in infectivity of virus in cultures which had been incubated for longer than 18–24 hours.—R.M.

FUCHS, F. (1952). Virusgewinnung vom Schwein. **[Foot and mouth disease virus production using pigs.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 30-31. **4030**

Skin lesions were artificially produced in anaesthetized pigs by the application of hot water or ultra-violet rays: 24–48 hours later the pigs were infected with F. & M. disease by combined i/v and s/c inj. of virus. F. obtained yields of 40–50 g. virus-containing material per pig from the F. & M. disease lesions, which developed on the prepared areas of skin, 36–48 hours after infection.—R.M.

SKINNER, H. H. (1953). **One week old white mice as test animals in foot and mouth disease research.** — *Proc. XVth Int. vet. Congr., Stockholm*, 1953. Part I. Vol. 1. pp. 195-199. Discussion: Part II. pp. 208-210. [In English. French and German summaries.] **4031**

[See also *V.B.* **24**, 1851.] In Part II of the Proceedings, S. introduced his paper and discussed the problem of strains of F. & M. disease virus which were of low pathogenicity for mice.—R.M.

GRALHEER, H. (1952). Die Ultrafiltration des MKS-Virus. **[Ultrafiltration of foot and mouth disease virus.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 50-51. **4032**

G. briefly described work on the determination of the size of the virus of F. & M. disease, and discussed the existence of differences in size between the three types of virus.—R.M.

SCHULZE, W. (1952). Beschallungsversuche des Maul- und Klauenseuchevirus. **[The effect of ultrasonic waves on foot and mouth disease virus.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 55-56. **4033**

F. & M. disease virus remained virulent after exposure for from 30 sec. to 6 min. to ultrasonic waves of wavelengths 800, 2400, and 4000 Kc, and at a field intensity of 0·75, 2·8 and 5·8 W/cm². The virus was inactivated by exposure for 30 min. to 800 Kc at 2·2 W/cm². [See also *V.B.* **22,** 979.]—R.M.

WINKLER, W. (1952). Virusgewinnung vom Rind unter Berücksichtigung sporadischer Krankheiten. **[Effect of sporadic diseases in cattle on foot and mouth disease virus production.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 32-33. **4034**

W. briefly discussed the effect of diseases other than F. & M. disease on the artificial infection of cattle with F. & M. disease virus and on the yield of virus obtained.—R.M.

DUKATSENKO, V. G. (1954). **[Effect of the vaccine VIEV against foot and mouth disease in beef cattle.]**—*Veterinariya, Moscow.* **31,** No. 2. pp. 21-23. [In Russian.] **4035**

On four farms for beef cattle, where F. & M. disease had been rampant and on a fifth farm which, itself, was free from the infection, but was connected by a much-used road with a farm where the disease occurred, all new animals, in all 1,225, were vaccinated with vaccine VIEV. Not one case of F. & M. disease was observed amongst them. Their reactions to the vaccination were only local and their weight gain satisfactory.—A. MAYR-HARTING.

MIKEL, C. J. (1954). **Vesicular diseases.**—*Vet. Med.* **49,** 141-146. **4036**

A general discussion on vesicular exanthema, vesicular stomatitis, and F. & M. disease. —R.M.

PETERSON, H. (1954). Tollwut in Estland 1937-1939 und 1941, 1942. **[Rabies in Estonia, 1937-42.]** — *Z. Hyg. InfektKr.* **138,** 364-367. **4037**

From March 1924 until the second world war strict legislation was effective in the systematic control of rabies in Estonia. P. gave details of the control measures. It was possible to keep the territory west of the line from Tartu (Dorpat) to the Gulf of Finland in the north and from Tartu to the Latvian frontier in the south free from rabies while the incidence remained continually heavy east of that line. There were 18 cases of rabies in animals in Estonia in 1937, 24 in 1938 and 34 in 1939—most of these being dogs. No cases occurred west of the line mentioned.

In 1940 the incidence rose to 129 cases, and to 151 in 1942. The Faculty of Veterinary Medicine, and with it the Pasteur Institute and all it contained, were destroyed by fire during the bombardment of Tartu. P. emphasized the necessity of dividing the supplies of fixed virus among a number of Institutes in time of war and of storing it in comparatively safe, fireproof rooms.—F.E.W.

STILES, G. W. (1954). **Observations on rabies with special reference to Colorado.**—*J. Amer. vet. med. Ass.* **124,** 175-181. **4038**

A. general account of rabies, with reference to the position in Colorado and the control of an outbreak in Denver City, Colorado in 1950, by the mass vaccination of dogs.—R.M.

I. COURTER, R. D. (1954). **Discussion of bat rabies in Florida.** — *Vet. Med.* **49,** 206-209. **4039**

II. VENTERS, H. D., HOFFERT, W. R., SCATTERDAY, J. E. & HARDY, A. V. (1954). **Rabies in bats in Florida.**—*Amer. J. publ. Hlth.* **44,** 182-185. **4040**

III. WHITE, E. J. (1954). **Bat rabies in Pennsylvania.**—*Ibid.* 186-187. **4041**

I. The existence of rabies in bats in the U.S.A. was first discovered in 1953, when the virus was isolated from a Florida yellow bat (*Dasypterus floridanus*). The virus has since been recovered from other apparently normal bats of the same species, from a Seminole bat (*Lasiurus seminola*), and from an unnamed insectivorous bat which attacked and bit a woman in Pennsylvania. There were Negri bodies in

the brain of the latter, and the diagnosis of rabies was confirmed by rabbit inoculation.

C. briefly reviewed present knowledge concerning bat-transmitted rabies of man and cattle in Latin America and Trinidad. Vampire or bloodlapping bats are the most important vectors, and their climatic requirements make it unlikely that "bat rabies" will ever be of importance in the U.S.A., except possibly at the southernmost fringe.

II. An account of a survey of rabies in bats in Florida, begun after a rabid Florida yellow bat (*Dasypterus floridanus*) had bitten a boy, in June 1953.

In all, 252 bats, belonging to 8 species, were examined: of these, 5 out of 183 Florida yellow bats and 1 of 61 Seminole bats (*Lasiurus seminola*) were rabid.

The authors pointed out that the bat which bit the boy was a lactating female, and may have attacked him in order to protect its young, and not because it was infected.

III. A report of an incident [see *I supra*] at Boiling Springs, Pennsylvania, in Sept. 1953, when a woman was attacked and bitten by a rabid insectivorous bat of unknown species. As a result of the incident the Pennsylvania Public Health authorities and the Game Commission have begun a survey on rabies in bats. No results are yet available.—A.S.

KOUGH, R. H. (1954). **Attack on a human being by a rabid insectivorous bat.**—*J. Amer. med. Ass.* **155,** 441. **4042**

A brief case report. A woman was bitten on the arm by a rabid bat (*Lasiurus cinereus*) in Pennsylvania [see preceding abst.]. K. believed this to be the second account of an attack by a rabid bat. He considered that a search should be made to ascertain the extent to which rabies occurs in bats in the U.S.A.

ERICKSON, E. E., MARCUSE, P. M. & HALPERT, B. (1954). **Human rabies. Report of three cases.** — *J. Amer. med. Ass.* **155,** 823-825. [Authors' summary copied *verbatim.*] **4043**

Not all patients who die are examined post mortem, and the brain is not always included in the examination. Whenever there is a suspicion that a patient has had rabies, a search should be made for characteristic lesions in the brain so that the disease may be identified. This is important because the recorded increased incidence of human rabies in a community focuses attention on its source and leads to enforcement of laws and regulations. This in turn decreases rabies in animals and reduces the chances of transmission to other animals and to man.

THOMAS, A. K. (1952). **Studies on rabies. VII. Observations on the paralytogenic factor in rabies vaccine.**—*Indian J. med. Res.* **40,** 121-129. **4044**

T. postulated that a specific factor in rabies vaccine is responsible for paralysis which sometimes occurs after rabies vaccination, and he carried out experiments to find out if anti-sheep brain serum or cobra venom would neutralize this factor, and if the "paralytogenic factor" was present in the supernatant fluid of rabies vaccine. Eighteen monkeys were each inoculated i/m with 3 doses, given at weekly intervals, of either vaccine to which anti-sheep brain or cobra venom had been added, or the supernatant fluid of vaccine. Twelve monkeys were similarly inoculated with untreated vaccine to serve as controls. Adjuvants were added to the vaccine in every case. Sixteen out of the 18 monkeys, and all 12 of the control group, developed paralysis, and 11 and 10 of each group respectively, died from encephalomyelitis. There was therefore no significant difference in the incidence of paralysis between monkeys inoculated with "treated" vaccine, and those inoculated with untreated vaccine. Similar experiments involving 26 g. pigs gave similarly inconclusive results.—G. L. SHARMA.

SABBAN, M. S. (1954). **Fowlpox and the use of the whole embryo vaccine in controlling the disease in Egypt.**—*Amer. J. vet. Res.* **15,** 133-136. **4045**

S. described the method of preparing fowl pox vaccine from the whole contents of 11- or 12-day-old chick embryos infected on the chorioallantoic membrane with an American strain of fowl pox virus. He stated that the vaccine gave a titre of up to 10^{-4}, produced some 98% of takes, and conferred an immunity of about 7 months' duration. No ill effects were reported following its use. The incidence of fowl pox markedly decreased following the introduction of the vaccine.

[The figures quoted suggest that the incidence of fowl pox was decreasing before the introduction of the new vaccine.—*Abstractor.*] —E. A. GIBSON.

BURNET, MACFARLANE & LIND, P. E. (1954). **Genetics of virulence in influenza viruses.**—*Nature, Lond.* **173,** 627-629. Discussion: pp. 629-630. **4046**

Simultaneous culture in chick embryo of two serologically distinct strains of influenza A virus possessing a high and a low capacity to produce an encephalitis or lung consolidation in mice, or haemorrhagic lesions in chick embryo, produced recombinants which showed that viru-

lence is not the function of a single gene. It is postulated that virulence genes exist which are rather loosely associated with each genome. These have differing relative affinities for the virulence genes so that a random distribution is impossible. In recombinants, some loss of virulence usually occurs.—A. ACKROYD.

GAJDUSEK, D. C., ANSLOW, R. O., HUBBELL, E. J. & YAGER, R. H. (1954). **Tissue culture studies on Venezuelan equine encephalomyelitis virus. I. Propagation in human uterine tissue.**—*J. Immunol.* **72,** 224-228. [Authors' summary modified.] **4047**

VEE virus, classified as a neurotropic agent, will survive and multiply in human uterine tissue fragments. The virus, carried through 15 subcultures in human uterine tissue, retained its pathogenicity for mice by intracerebral inoculation. This represents a total dilution factor of the original virus of at least 10^{-43}.

The authors found that tissue culture methods are not as sensitive as biological methods using intracerebrally inoculated mice.

The tissue fragments in such cultures contain considerably more virus than the supernatant fluids.

TRUETA, J. & HODES, R. (1954). **Provoking and localising factors in poliomyelitis. An experimental study. —** *Lancet.* **266,** 998-1001. **4048**

The occasional isolation of poliomyelitis virus from the blood has led to the belief that the disease may spread by way of the circulatory system, thus emphasizing the importance of the vascular supply to the c.n.s. and the permeability of the blood/c.n.s. barrier. In experiments with mice and a rabbit the authors demonstrated the effects of various stimuli, including exercise, the fitting of a plaster cast to the hind limb, and the injection of irritants into the thigh, on the vascular supply to the lumbar region of the spinal cord. There were marked changes, and he considered that they were very probably of such a sort as to alter the permeability of the blood/c.n.s. barrier and predispose the c.n.s. to infection by blood-borne poliomyelitis virus.—A.S.

FREUND, K. (1952). Das Verhalten des Virus der infektiösen Anämie im Mäusegehirn. **[Behaviour of the virus of equine infectious anaemia in the brain of the mouse.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 53-54. **4049**

The virus of E.I.A. retained its pathogenicity for foals after 7 days in the brain of mice, but lost its pathogenicity after intracerebral passage from mouse to mouse. Alternating passage from mouse brain to horse testicle and back to mouse brain was, however, successful. —R.M.

PIERCY, S. E. (1953). **Some recent experiments with lapinized rinderpest vaccine in East Africa.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 278-283. Discussion: pp. 226 - 227. [In English. French and German summaries] **4050**

During a discussion of P.'s paper [*V.B.* **24,** 1877], the question of the possible harmful effect of freeze-drying on lapinized rinderpest virus was raised.—R.M.

DUJARRIC DE LA RIVIÈRE, R., CATEIGNE, G., HANNOUN, C. & MILLOT, P. (1953). Sur l'existence d'un virus dans les sécrétions des bovidés atteints de coryza gangréneux. **[A virus isolated from nasal mucus and conjunctival fluid of cattle infected with bovine malignant catarrh.]**—*C. R. Acad. Sci., Paris.* **236,** 2557-2559. **4051**

Nasal and conjunctival secretion from cattle with bovine malignant catarrh was inoculated, after penicillin and streptomycin had been added, on to the chorio-allantoic membrane of fowl embryos aged 8 days. Mesodermal lesions of the chorio-allantois with death of the embryo were observed, and these lesions were reproduced by passage of allantoic fluid. Particles of 80 mμ diam. were seen in infective material examined by electron microscopy. The authors inoculated intranasally or by subcutaneous inj. 4 cows, 2 lambs and an unstated number of ferrets with material from infected cattle. A transient rise of temp. was observed in most of these animals, and a slight nasal discharge which persisted for 4 days was noticed in one of the cows 10 days after inoculation. No reactions were observed in monkeys or mice. No antibodies could be detected in the serum of convalescent cattle, and there was no cross-immunity with influenza virus.—R.M.

PIERCY, S. E. (1953). **Investigation into infectious bovine malignant catarrh.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 328-332. Discussion: Part II. pp. 235-236. [In English. French and German summaries.] **4052**

[See also *V.B.* **24,** 421.] In Part II of the *Proceedings,* P. described results of experiments obtained since the paper was written. These included the further passage of the virus of bovine malignant catarrh in cattle, and some points concerning transmission of the disease to cattle from sheep.—R.M.

Ochi, Y. (1953). La fièvre épizootique des bovins au Japon. [**Epizootic fever in cattle in Japan. (Three-day-fever.)**]—*Bull. Off. int. Epiz.* **40,** May. pp. 518-533. [English summary.] **4053**

This disease, previously known as "bovine influenza", was so serious that a "Research Commission on Cattle Influenza" was appointed. The Commission found it to be more like "three-day sickness" and not influenza; and they therefore changed the name to "bovine epizootic fever".

The cause is a virus present in the blood at the onset of the fever and its virulence can be increased by artificial passage. The symptoms, after an incubation period of about 3 days (extremes 2–7), are fever, general disturbance and inappetence. Symptoms last about 3 days only.

The lesions are chiefly interstitial emphysema of the lungs, complicated by swelling of the spleen, liver, kidney and lymph nodes. Propagation is by direct or indirect contact and the role of blood-sucking insects is not so important. The mortality is usually about 0·5% and there is no specific treatment, but a crystal violet killed vaccine is now successfully used for its prevention.—D. S. Rabagliati.

Van de Kerk, P. (1954). Peristomatitis pustulosa contagiosa ovina. [**Contagious pustular dermatitis of sheep in the Netherlands.**]—*Tijdschr. Diergeneesk.* **79,** 608-615. [English, French and German summaries.] **4054**

Outbreaks of contagious pustular dermatitis occurred in several flocks of sheep. A clinical description with very instructive photographs is given. No experiments about the cause of the disease were performed. The lips were treated with 10% potassium permanganate soln. In one outbreak the disease was complicated with foot rot. Two attendants developed dermatitis of the hands. The author discussed the literature on contagious pustular dermatitis from sheep in human beings and cited references.—C. A. van Dorssen.

Naudé, W. du T., Madsen, T. & Polson, A. (1954). **Different-sized infective particles of Rift Valley fever virus.** [Correspondence.]—*Nature, Lond.* **173,** 1051-1052. **4055**

By means of ultracentrifugation, the authors detected two different sizes of infective particle (30·9 mμ and 51·8 mμ) in a neurotropic strain of Rift Valley fever virus. Particles of only one size (49·7 mμ) were present in a viscerotropic strain.—R.M.

Hubrig, Th. & Ohder, H. (1954). Ansteckende Schweinelähme in Thüringen. [**Porcine encephalomyelitis in Thuringia.**]—*Mh. VetMed.* **9,** 173-177. **4056**

A clinical description of two outbreaks of porcine encephalomyelitis in Thuringia. The authors discussed differential diagnosis.—A.S.

Fischer, K. (1952). Studien über den Wanderungsweg des Schweinelähmevirus. [**Progress of the porcine encephalomyelitis virus in the central nervous system.**]—*Arch. exp. VetMed.* **6,** Suppl. p. 52. **4057**

A brief description of histological changes, and presence of virus, in parts of the brain and spinal cord of pigs killed from 3 to 13 days after intranasal infection with the virus of Teschen disease. [See also *V.B.* **24,** 1886.]—R.M.

I. Bay, W. W. (1952). **Transmissible gastro-enteritis in swine—field herd studies.**—*J. Amer. vet. med. Ass.* **120,** 283-286. **4058**

II. Bay, W. W., Doyle, L. P. & Hutchings, L. M. (1953). **Transmissible gastroenteritis of swine—a study of immunity.**—*Ibid.* **122,** 200-202. **4059**

I. Transmissible gastro-enteritis is a major cause of loss among piglets in the U.S.A. B. described symptoms and the course of the disease in four herds, in three of which there was evidence that sows which farrowed after recovery from the disease transmitted immunity to their litters.

In B.'s experience it was sometimes an effective preventive measure, after the appearance of infection, to keep unaffected litters and pregnant sows dispersed and well away from diseased animals. Another alternative was to stop farrowing on the affected farm for 4 - 8 weeks.

II. Fifty-two out of 62 piglets born to 10 sows fed infective intestinal material at various intervals before parturition lived when similarly fed, while of 36 born to control sows all except 3 died. Six of the 10 sows were fed infective material 40 days or more before parturition and of these 5 produced litters which were completely immune to infected material fed between their 3rd and 6th days. S/c or i/m injection of infective material into sows did not have the same protective effect on the litters, and 81% of piglets born to sows so exposed died after challenge.

The results suggested that sows which have recovered from gastro-enteritis possess an immunity which is transferred to their litters, possibly by means of immune bodies present in the milk.—A.S.

Schmidt, D. (1952). Liquoruntersuchung bei der Staupe des Hundes. **[Examination of the cerebrospinal fluid in dog distemper.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 40-41. **4060**

The c.s.f. of 25 dogs with distemper in which catarrhal symptoms predominated, did not differ from that of 50 normal dogs. The c s.f. of 25 dogs infected with distemper virus by intrathecal or intracerebral inoculation contained more cells and more protein; tests for globulin were positive, and the curve obtained from the results of colloidal gold tests was deviated to the right.—R.M.

Potel, K. (1954). Der gegenwärtige Stand der Staupeforschung am Friedrich-Löffler-Institut auf der Insel Riems bei Greifswald. **[Research on dog distemper at the Friedrich-Löffler Institute, Germany.]**—*Schweiz. Arch. Tierheilk.* **96,** 260-271. [English, French and Italian summaries.] **4061**

An account of virological and anatomopathological work with a distemper strain originating from two dogs. The virus attacks the blood vessel walls and the changes in the parenchyma are secondary. Neurotropism is denied. No inclusion bodies were demonstrated. —M. Sachs.

Martin, L. A. & Goret, P. (1953). Sur quelques caractères reliant les virus du complexe "maladie des chiens" et certains virus hépatoneurotropes de l'homme. **[Suggested relationship between dog distemper virus and certain hepatoneurotropic viruses of man.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 379-382. Part II. pp. 245-246. [In French. English and German summaries.] **4062**

[See also *V.B.* **24,** 1504.] In Part II of the *Proceedings* P. Goret made general remarks on the adaption of viruses to the rabbit and to the ferret. Two speakers questioned the possibility of transmitting distemper to the rabbit. —R.M.

Bindrich, H. (1952). Die nervöse Hundestaupe in laufenden Passagen. **[Passage of a nervous form of distemper.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 38-39. **4063**

Distemper virus was passaged in the c.s.f. of dogs 88 times and in the brain of dogs 45 times. During passage the incubation period was shortened to 5–7 days, and the dogs always developed nervous symptoms. [See also *V.B.* **22,** 3713.]—R.M.

Kober, U. (1952). Zur Hardpad-disease. **[Hardpad disease.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 42-43. **4064**

A brief and conventional account of "hard pad" disease, based on 40 affected dogs seen in Berlin.—R.M.

Rubarth, S. (1952). Die Epizootologie und Virologie der Hepatitis contagiosa canis. **[Epidemiology and virology of canine virus hepatitis.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 105-109. **4065**

A general account of canine virus hepatitis. —R.M.

Magrassi, F., Leonardi, G. & Scanu, A. (1951). Osservazioni si un'encefalopatia virale del gatto. **[Observations on a virus infection of the brain in cats.]**—*Boll. Soc. ital. Biol. sper.* **27,** 1233. **4066**

The authors described a rapidly fatal disease of cats in and around Sassari, Italy, characterized by muscular tremor, contractions of the lips and eyelids, ataxia, twitching of the limbs and paralysis. Death occurred 6–12 hours after the initial appearance of symptoms. P.M. examination was negative, apart from general congestion, but there were degenerative changes in the cytoplasm, and partial loss of nuclei, of the nerve cells of the cerebral cortex and medulla. Attempts to culture bacteria from the brain of affected cats failed. The authors transmitted the disease to kittens by intracerebral inoculation of suspensions of brain from affected cats: adult cats were less susceptible to infection by this means.—R.M.

Reising, G. & Hitchner, S. B. (1954). **A viability study of a frozen Newcastle vaccine for spray application.**—*Poult. Sci.* **33,** 494-499. [Authors' summary modified.] **4067**

Lab. prepared high titre frozen Newcastle disease vaccines employing 5 different diluents maintained sufficiently high titres, throughout a 12-month holding period at −20°C., to give a uniformly good immunogenic response as measured by the haemagglutination-inhibition test. Under refrigeration at 5°C., thawed vaccine preparations gradually lost titre over a 6-month period. Re-freezing after thawing, and fluctuation in temp. from −20° to −70° to −20°C. had no deleterious effect on the titre of vaccines.

Meyer, K. F. (1953). **Distribution and identification of psittacosis viral agents in the animal kingdom.** — *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp.

338-343. Discussion: Part II. p. 238. [In English. French and German summaries.] **4068**

In discussing M.'s paper [*V.B.* **24,** 457], A. Foggie briefly described research on the virus of infectious abortion in sheep.—R.M.

GROSS, W. B. (1954). **Infectivity determinations on strains of agents causing turkey infraorbital sinusitis.**—*Poult. Sci.* **33,** 265-272. **4069**

G. gave a detailed description of the sinusitis which developed in turkeys inoculated with strains of the turkey sinusitis agent or a strain of the agent of chronic respiratory disease of fowls. These two agents could not be differentiated from the results of these experiments.

—E. A. GIBSON.

WAGENER, K. (1952). Die Sonderstellung des Virus hinsichtlich Immunität und Allergie. **[Immunity and allergy in virus diseases.]**—*Arch. exp. VetMed.* **6,** Suppl. pp. 114-118. **4070**

A brief account of the principles of immunity and allergy in virus diseases in general.

—R.M.

COX, H. R. (1954). **Living modified viruses as immunizing agents.**—*Brit. med. J.* July 31st, 259-265. **4071**

Attenuated living virus vaccines induce immunity by producing inapparent subclinical infections. Their use is the best method for securing long-lasting and safe protection. C. presented a review of yellow fever, rabies, poliomyelitis, and bluetongue vaccines.

—W. R. BETT.

ANDREWES, C. H. (1954). **Nomenclature of viruses.**—*Nature, Lond.* **173,** 620-621. **4072**

At the sixth International Congress of Microbiology, the International Nomenclature committee decided that the use of systems of classification for and application of binomials of the Linnaean type to viruses as a whole is still undesirable at present. It favoured a uniform system of forming the equivalent of generic names with the use of the suffix 'virus.' The use of binomial names of this type was officially sanctioned for the viruses of the pox, influenza, insect-pathogenic, poliomyelitis, and herpes subgroups.—A. ACKROYD.

See also absts. **4213-4215** (reports, India); **4217** (book, tropical diseases).

IMMUNITY

BOULANGER, P., RICE, C. E. & PLUMMER, P. J. G. (1954). **Parallel studies of complement and blood coagulation. XII. Effect of pregnancy and sex hormones.**—*Cornell Vet.* **44,** 191-198. **4073**

Complement titrations during pregnancy in a small group of g. pigs revealed a decline during the last 2 weeks before parturition; the titre had not returned to normal by the second day *post-partum* but had done so by 8 days *post-partum*. The components mainly affected were C'2 and C'3. Groups of male castrated g. pigs were treated with testosterone, stilboestrol and progesterone, but only in those receiving stilboestrol was there a decline in complement titre affecting the same components.

—G. FULTON ROBERTS.

COFFIN, S. F. & PICKLES, M. M. (1953). **The ability of trypsin to restore specific agglutinating capacity of erythrocytes treated with periodate.**—*J. Immunol.* **71,** 177-182. **4074**

The D and S blood group antigens are destroyed by treatment of the cells with periodate. If the periodate treament has not reached completion the activity of these antigens is partially restored by treatment with trypsin.

—G. FULTON ROBERTS.

FARRELLY, B. T. & MILLER, W. C. (1954). **Equine haemolytic disease. Parturient and post-parturient treatment of antibody positive mares and their foals.**—*Vet. Rec.* **66,** 223-224. **4075**

Although, in equine haemolytic disease, a satisfactory technique for exchange transfusion has been devised, it may be possible to prevent the disease in the new-born foal. In known or suspected cases, the foal must be muzzled at birth to prevent it sucking the colostrum which contains very high antibody concentrations, and be fed artificially near the mare's udder for the first 36 hours with colostrum or milk from a healthy mare or with cow's milk treated with saccharated lime and blackcurrant juice. Antibiotics with vitamins A and D must also be injected intramuscularly.—A. ACKROYD.

See also absts. **3971** (autogenous vaccine against mastitis); **3976** (anthrax vaccine); **3983** (B.C.G. vaccination of calves); **3997-3999** (brucellosis); **4006** (*C. albicans* infection in immunized animals); **4010** (avianized bovine pleuropneumonia vaccine); **4020** (coccidiosis in chicks); **4024** (anaplasmosis); **4028-4035** (F. & M. disease); **4044** (rabies); **4045** (fowlpox vaccine); **4050** (rinderpest vaccine); **4059** (transmissible gastroenteritis in swine); **4067** (Newcastle disease vaccine); **4070** (virus diseases); **4071** (modified living viruses as immunizing agents); **4093-4094** (immunity to *Trichinella spiralis* in parabiotic rats); **4220** (book, blood groups in animals).

PARASITES IN RELATION TO DISEASE [GENERAL]

ANON. (1954). **Report of Committee on Parasitic Diseases.**—*Proc. 57th Ann. Meet. U.S. live Stk sanit. Ass.* 1953. pp. 239-243. **4076**

The emphasis of the report is on the control of endoparasites by the combination of good hygiene and animal management, with the use of chemical agents. A daily dose of 0·5 g. of phenothiazine per 100 lb. body wt. is reported to control susceptible worms in cattle. Reference is also made to the appearance of the itch mite of sheep (*Psorergates*), the only effective remedy for which is dipping in lime and sulphur.—D. W. JOLLY.

VOGELSANG, E. G. & RODRÍGUEZ, C. C. (1952). Ecto y endoparásitos de animales en cautiverio del jardin zoológico de Maracay. **[Protozoan, helminth and arthropod parasites in zoo animals in Maracay, Venezuela.]**—*Rev. Med. vet., Caracas.* **11,** Nos. 3 & 4, pp. 311-316. **4077**

The authors gave a list of the ecto- and endoparasites they had encountered in captive animals in the Maracay zoological gardens.

—A.S.

CAMERON, T. W. M. (1953). **Factors determining the geographical distribution of parasites.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 455-458. Discussion: Part II. pp. 260-262. [In English. French and German summaries.] **4078**

[See also *V.B.* **24,** 1146.] During the discussion 5 speakers quoted examples of factors determining the geographical distribution of parasites.—R.M.

FOSTER, A. O. (1953). **Critical review of present-day treatments of parasitic infections, giving lists of drugs.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 458-468. Discussion: Part II. pp. 263-265. [In English. French and German summaries.] **4079**

Part II. of the *Proceedings* contained a general discussion on the author's treatment of parasitic infestations. [See also *V.B.* **24,** 1147].

—R.M.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

MORELLINI, M. & SACCA, G. (1953). Alcuni aspetti del meccanismo di diffusione del b. tubercolare da parte di *M. domestica* (studio sperimentale). **[Spreading of tubercle bacilli by *M. domestica*.]**—*R. C. Ist. sup. Sanit.* **16,** 267-285. [English, French and German summaries.] **4080**

M. domestica had no particular preference for sputum as a food whether it contained tubercle bacilli or not. By attaching a minute paper cylinder to the posterior part of the abdomen of flies, the authors were able to study the frequency of defaecation and nature of the faeces in flies feeding on different substances. The ingestion of the tubercle bacilli did not cause diarrhoea in the flies studied. Regarding the possible transmission of tubercle bacilli by the vomit of these flies, they observed that the drop of fluid, that appears on the fly's proboscis after a meal, was always swallowed, and was never deposited on the surface on which the fly rested.—R.M.

PARSONS, B. T. (1954). **Field observations on a breeding place of *Glossina pallidipes* Austen in Kenya.**—*Bull. ent. Res.* **45,** 163-174. **4081**

Breeding sites, favourable to *G. pallidipes*, were studied for three years, by hand-searching for pupae, the collection of flies, and of meteorological data. The numbers of pupae counted, varied with the prevailing temperature, rainfall, and vegetation, and were not closely related to the numbers of flies caught.

—D. W. JOLLY.

NOWOSIELSKI-SLEPOWRON, B. J. A. (1953). **An experiment on the control of tsetse (*Glossina palpalis* R.-D.) in high forest of West Africa.**—*Bull. ent. Res.* **44,** 703-710. **4082**

Bush clearing, to a height of 20 feet, and a depth of 250–300 yards along both banks of streams, caused a 90% reduction of the tsetse fly population in valleys around Kumasi. The species involved were *G. palpalis*, *G. pallicera*, and *G. nigrofusca*. The efficiency of the control measures was assessed from catches in traps, or captures by "fly boys."

—D. W. JOLLY.

I. HOCKING, K. S., PARR, H. C. M., YEO, D. & ANSTEY, D. (1953). **Aircraft applications of insecticides in East Africa. IV. The application of coarse aerosols in savannah woodland containing the tsetse flies *Glossina morsitans* and *G. swynnertoni*.**—*Bull. ent. Res.* **44,** 627-640. [Authors' summary modified.

For previous parts, see *V.B.* **24,** 799, 800 and 2394.] **4083**

II. Yeo, D. & Thompson, B. W. (1954). **Aircraft applications of insecticides in East Africa. V. The deposition in open country of a coarse aerosol released from an aircraft.** —*Ibid.* **45,** 79-92. [Abst. from authors' summary.] **4084**

I. An account of attempts to eradicate *G. morsitans* and *G. swynnertoni* from two blocks of savannah woodland in the Central Province of Tanganyika by the application of insecticides from aircraft. Coarse aerosols were used, with mass median diameters of approx. 90 μ; droplet diameters varied from 4 μ to 250 μ approx.

Eight applications of insecticides were made at intervals of two weeks. Each application was carried out at a nominal dosage of 0·25 gal. per acre, which was equivalent to 0·20 lb. per acre of the p,p'isomer of D.D.T. or 0·03 lb. per acre of the γ-isomer of benzenehexachloride (BHC).

In the area treated with D.D.T. it is possible that both species of fly were eradicated for a short period, but small populations were reestablished there by immigrant flies. In the other block the reduction was not so great, but it is not considered that this was due to a lesser effectiveness of the BHC, but to a combination of circumstances that led to less effective applications.

The authors made some general observations upon the use of aircraft for this sort of work, particularly in connexion with the effect of meteorological conditions.

II. An investigation has been made of the deposition in open country of a coarse aerosol released from an aircraft flying at approx. 30 feet. A constant drop spectrum was used, with a mass median diam. of approx. 80 μ.

It was shown that the rate at which the aerosol deposits is greatly affected by the degree of atmospheric turbulence, being approx. inversely proportional to the time interval elapsing between production of the aerosol and deposition, except for deposits laid down near the line of emission.

Droplets less than 10 μ in diam. are not deposited appreciably within any useful time interval, and the use of drop spectra consisting mainly of such small droplets would be uneconomical. The soln. used was a 10% w/v soln. of technical D.D.T. in a solvent consisting of equal parts of "Shell Power" kerosene and "Shell" diesel distillate. Evaporation of the volatile constituents takes place very rapidly during the first few sec. after production of the droplets, and deposits formed immediately beneath the aircraft track have lost 50% of their initial volume. Solvent losses increase significantly with time, but so slowly that for most practical purposes the solution strength of the ground deposit is very nearly constant for all important sampling points.

The authors discussed the dosages received by an insect, and indicated in a general fashion that in tropical Africa there are only short periods of daylight during which aerosols may be used most effectively.

The ground deposition in open country is only one aspect of the complex problem of aerosol behaviour; the authors indicated other important aspects of the problem.

Kostich, D. Y. (1952). **Golubac fly** (*Simulium columbaczensae*) **in Yugoslav Danubian region.**—*Acta trop., Basle.* **9,** 264-269. [In English.] **4085**

K. discussed *S. columbaczensae* and the damage it causes to livestock in certain regions of the Danube valley. In the process of bloodsucking the females secrete a toxic salivary material which, after a heavy attack, may be present in the blood of bitten cattle in quantities sufficient to cause great distress, difficulty in breathing, and cardiac disturbance often followed by death. The flies appear in great numbers in some years, and at P.M. examination it is not uncommon to find them beneath the eyelids, and in the ears, nose, mouth and bronchi.

Control is difficult: it might be possible to encourage the sterlet (*Acipenser ruthenus*), a small species of sturgeon which feeds on the larvae; but the simplest course is to remove livestock from the affected zones when attacks are heavy, or to keep them in buildings, lighting smoky fires outside to repel the flies.—A.S.

Rivosecchi, L. (1953). I muscidi pungenti (Diptera, Stomoxydinae) italiana. **[Flies of the sub-family Stomoxinae in Italy.]**—*R. C. Ist. sup. Sanit.* **16,** 286-332. **4086**

R. described the morphology, life-cycle, feeding habits, effects on man and animals, and control of *Stomoxys calcitrans, Siphona* (*Lyperosia*) *irritans,* and *S.* (*L.*) *titillans.*—R.M.

Campbell, J. A. (1953). **Studies on the control of the sheep tick,** *Ixodes ricinus* **L.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 450-455. Discussion: Part

II. p. 259. [In English. French and German summaries.] **4087**

During the discussion on C.'s paper [*V.B.* **24,** 1159] two points were brought up, namely whether a higher conc. of benzene hexachloride in the sheep dips used by C. would have been more effective, and the disappearance of *I. ricinus* in parts of N. W. Germany and Holland where previously uncultivated land had been ploughed up.—R.M.

See also abst. **4217** (book, tropical diseases).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KALAPESI, R. M. & PUROHIT, B. L. (1954). **Observations on histopathology of morbid tissues from a case of natural infection with *Schistosoma spindalis* in a bovine.**—*Indian vet. J.* **30,** 336-340. **4088**

Besides the usual lesions in the lungs, liver, and intestines, there was focal necrosis in the liver parenchyma which the authors attributed to circulating toxins.—R. N. MOHAN.

GÖTZSCHE, N. O. (1951). Bidrag til Taenia saginata's epidemiologi. **[Epidemiology and control of *T. saginata* infestation of human beings in Denmark.]** — *Nord. Vet.-Med.* **3,** 957-983. [In Danish. English and German summaries. Abst. from English summary.] **4089**

Records, covering 1949-50, of the incidence of *T. saginata* in hospital-treated patients in the Aarhus and Skanderborg counties showed little direct correlation with the incidence of *Cysticercus bovis* in local cattle. Only in 2 out of 224 cases were carriers of *T. saginata* found on farms from which cattle had been sent to the abattoirs supplying the area. Gulls may ingest oncospheres in sewage and excrete them on pastures; prevention of infestation of cattle is based on correct sewage disposal.

—M. L. CLARKE.

SILVERMAN, P. H. (1954). **Studies on the biology of some tapeworms of the genus *Taenia*. I. Factors affecting hatching and activation of taeniid ova and some criteria of their viability.**—*Ann. trop. Med. Parasit.* **48,** 207 - 215. [Abst. from author's summary.] **4090**

S. discussed the literature on laboratory methods of hatching certain cyclophyllidean ova and of activating the hexacanth embryo.

The ova of cestodes of the family Taeniidae require a combination of stimuli different from those required for the hatching of ova of the families Anoplocephalidae, Davaineidae, Dilepididae and Hymenolepididae. For the family Taeniidae such stimuli are related to the nature of (i) the embryophore and (ii) the membrane enclosing the hexacanth embryo, which S. referred to as the 'oncospheral membrane.'

Taeniid ova require a protease for the disintegration of the embryophore and the hatching of the hexacanth embryo still enclosed in this membrane. A combination of lipolytic substances is necessary, however, to increase the permeability of the membrane, following which the hexacanth embryo is stimulated to activity, becoming motile and tearing its way out by means of hooks.

S. described the role of pancreatin, trypsin, bile salts and cholesterol in hatching and activating the embyro.

The hatching requirements of *T. saginata* ova differ from those of *T. pisiformis*. Whereas the latter can be digested and activated when placed directly into intestinal juice, the former require pretreatment with gastric juice.

S. described three criteria for determining the viability of taeniid ova: (i) the motility of the hexacanth embryo, (ii) the cytoplasmic and external appearance of the oncosphere, and (iii) its reactions to vital staining.

MUSTAKALLIO, K. K. & SAIKKONEN, J. I. (1954). **The distribution of quinacrine in *Taenia saginata*.**—*Exp. Parasit.* **3,** 167-172. [Abst. from authors' summary.] **4091**

The authors studied, with the aid of fluorescence microscopy, the distribution of mepacrine hydrochloride (quinacrine) in six *T. saginata* expelled by this drug. They observed that the drug possesses a great affinity for the suckers on the scolex; this may explain its efficiency in expelling the worms.

VON BRAND, T., WEINSTEIN, P. P. & WRIGHT, W. H. (1954). **The working ability of rats infected with *Trichinella spiralis*.**—*Amer. J. Hyg.* **59,** 26-31. **4092**

The running ability of rats infested with *T. spiralis* was reduced by 49–60%. The weight loss induced by this exercise was 150–170% greater than that observed in the uninfested control rats.—D. W. JOLLY.

I. ZAIMAN, H., WILSON, J. D., RUBEL, J. & STONEY, J. M. (1954). **Studies on the nature of immunity to *Trichinella spiralis* in parabiotic rats. IV. The immune response in**

" uninfected " parabiotic rats surgically separated from their mates 2, 3, 4, or 5 days after the latter received an immune infection. —*Amer. J. Hyg.* **59,** 39-51. [For previous parts, see *V.B.* **24,** 3197-3199.] **4093**

II. Zaiman, H. & Stoney, J. M. (1954). **Studies on the nature of immunity to *Trichinella spiralis* in parabiotic rats. V. The strength of the immune response in the " uninfected " twin one month after its mate received an immunizing infection of *Trichinella* at the rate of 15 larvae per gram of body weight.**—*Ibid.* 52-59. **4094**

I. Five days was insufficient time for a parabiotic twin rat to acquire a significant immunity to *T. spiralis* when its twin only had received an immunizing dose of infective larvae. The results were assessed by counts of larvae in the diaphragm.

II. The immunity to *T. spiralis* which developed in a parabiotic twin rat through the immunization of its mate, was sufficient for it to survive a lethal dose of *T. spiralis* larvae.

—D. W. Jolly.

Rueda, E. A. (1954). La piretrina como antiparasitario en la estrongilosis equina. Estudio comparativo con la fenotiazina. [**Comparison of pyrethrum and phenothiazine as anthelmintics against strongyles in horses.**]—*Rev. Vet. milit., B. Aires.* **2,** 147-152 & 154-156. **4095**

From the results of treating 6 horses infested with strongyles, R. considered that pyrethrum, at a dosage of 3·5 mg./kg. body wt., was as efficient an anthelmintic as phenothiazine.—R.M.

Spedding, C. R. W. (1954). **The persistence of the effects of worm infestation in sheep.**—*Emp. J. exp. Agric.* **22,** 55-58. [Author's summary modified.] **4096**

The persistence of the effects of *Trichostrongylus axei* infestation was studied in sheep, using worm-free controls and their infested twins, under conditions of no reinfestation and of continuous re-infestation by grazing.

It was found that adverse effects on live-weight gain, wool production, and carcass quality persisted for periods of up to 1 year.

The resistance, as reflected in live-weight gain, of worm-free sheep was studied when they were subsequently exposed to infestation by grazing. The results indicated that age resistance was fully operative at 12 months of age under these conditions.

Richard, R. M., Shumard, R. F., Pope, A. L., Phillips, P. H. & Herrick, C. A. (1954). **The effect of phlebotomy versus stomach worm, *Haemonchus contortus*, infection on the growth and certain blood constituents of lambs.**—*J. Anim. Sci.* **13,** 274-282. [Abst. from authors' summary.] **4097**

The authors studied the host-parasite relationship in lambs infested with *H. contortus*, and determined the effect of certain haemopoietic dietary factors on their resistance to infestation. The blood haemoglobin levels were depressed in all cases by the infestation. Plasma levels of niacin and vitamin B_6 were also adversely affected. Growth was retarded. Experimental bleeding produced similar effects. The anaemia was less severe and gains were better in lambs which received trace minerals plus steamed bone meal. Increasing the protein, with or without minerals, appeared to be of little value in increasing resistance to infestation.

Pierotti, P. (1952). Enterite nodulare parassitaria in pecora. [**Parasitic nodules in the intestines of sheep.**]—*Ann. Fac. Med. vet., Pisa.* **5,** 143-151. [English and French summaries.] **4098**

P. described the occurrence of nodules of varying size in the mucosa of the small intestine of sheep aged 3–7 years, slaughtered at Pisa. The nodules contained nematode larvae, as yet unidentified; the lesions differed from those caused by *Oesophagostomum columbianum*. P. noted the occurrence of lungworms in sheep with these intestinal nodules.—R.M.

Spedding, C. R. W. (1954). **Pasture management to control worms in sheep.**—*Agriculture, Lond.* **61,** 51-54. **4099**

The pasture management recommended is that of strip grazing, the sheep being moved on to a fresh area of pasture every two days, because three days is the time required for nematode eggs to develop into infective larvae. An area is not grazed twice in a season. S. suggested that the use of this method on leys which have not carried sheep or cattle for two years should result in the production of worm-free sheep.—D. W. Jolly.

v. d. Burg, W. B. (1953). **Lethal bleeding in the cranial cavity of deer (*Cervus elaphus*) caused by a nematode, belonging to the family of Metastrongylidae.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 414-417. Discussion Part II. pp. 251-

253. [In English. French and German summaries.] **4100**

[See also *V.B.* **24,** 498.] There was a discussion on invasion of the c.n.s. by nematodes in general.—R.M.

CASAROSA, L. (1954). Prime osservazioni sulla cistocaulosi degli ovini in Italia. [*Protostrongylus nigrescens* **in sheep in Italy.**]—*Zooprofilassi.* **9,** 153-164 & 167. [English and French summaries.] **4101**

C. described the morphology of *P. nigrescens* and the lung lesions caused by the nematode in sheep. He stated that the occurrence of *P. nigrescens* had not been recorded previously in sheep in Italy.—R.M.

ROMBOLI, B. (1954). Bronchiti e polmoniti da elminti in patologia comparata. **[Comparative pathology of bronchitis and pneumonia caused by helminth parasites.]**—*Atti Soc. ital. Sci. vet., Cortina d'Ampezzo,* 1953. **7,** pp. 97-176. [English and French summaries pp. 149-151.] Discussion: pp. 174-176. **4102**

R. described the pathology of the lungs and bronchi caused by helminth parasites in domestic and wild mammals and birds, with 607 references to the literature. The subject matter is divided into three chapters: parasites which migrate through the lungs; parasites which settle in the bronchi; and parasites which settle in the lungs and bronchi. Eighteen sections deal with infestation by particular parasites in particular animals. There are 26 photomicrographs.—R.M.

MARTIN, H. M. (1954). **The occurrence of *Physaloptera rara* Hall and Wigdor 1918 in dogs in Pennsylvania.** — *Proc. Helm. Soc. Wash.* **21,** 60-61. **4103**

Nematodes collected from the stomachs of two puppies were identified as *Physaloptera rara.* This is the first report of the worm in Pennsylvania.—D. W. JOLLY.

VANNI, V. (1950/53). Nuevo metodo de contralor biologico de los anthelminticos. **[Method for *in vitro* testing of anthelmintics.]** —*Rev. Inst. Malbrán, B. Aires.* **15,** 82-85. **4104**

An account of tests of the action of anthelmintics, using *Anguillula aceti* and *Limnodrilus* [no specific name given], with the deduction that the former is useful in testing for activity against roundworms, and the latter for tapeworms.—A.S.

See also absts. **4212** (report, West of Scotland Agricultural College); **4217** (book, tropical diseases).

NUTRITIONAL AND METABOLIC DISORDERS

RUSOFF, L. L., FUSSELL, J. M., HYDE, C. E., CROWN, R. M. & GALL, L. S. (1954). **Parenteral administration of aureomycin to young calves with a note on mode of action.** — *J. Dairy. Sci.* **37,** 488-497. [Abst. from authors' summary.] **4105**

Intramuscular injection of 400 mg. of aureomycin into young calves once weekly increased growth by 30% over controls at 16 weeks of age. Aureomycin administered orally at a level of 50–90 mg. daily stimulated growth by 20%. The antibiotic also caused a significant increase in height at withers.

Rumen studies of control calves, aureomycin-injected calves, and those fed aureomycin orally revealed no significant differences in rumen environment (pH, Eh [oxidation-reduction potential]), degree of fibre digestion in the artificial rumen, rumen flora and B-vitamin content (B_{12}, pantothenic acid, riboflavin, niacin, biotin, pyridoxine, thiamine, and folic acid) of rumen fluid.

Injected aureomycin is excreted mainly through the urine and bile, probably by-passing the rumen, whereas orally administered aureomycin is excreted mainly in the faeces.

The carcasses of aureomycin-injected calves and of those given aureomycin *per os* had a larger skeletal size and more meat than those of controls.

The effect of aureomycin in stimulating growth in the young calf is not due to its action in the rumen, but possibly to its effect on bone metabolism.

ELAM, J. F., JACOBS, R. L., FOWLER, J. & COUCH, J. R. (1954). **Effect of dietary *Clostridia* upon growth-promoting responses of penicillin.**—*Proc. Soc. exp. Biol., N.Y.* **85,** 645-648. [Abst. from authors' summary.] **4106**

The feeding of penicillin stimulated growth and decreased the clostridial count per g. of faeces in chicks maintained in old quarters. Penicillin failed to stimulate growth or decrease the clostridial count in chicks maintained in clean quarters where the clostridial population was low. The feeding of faecal clostridia decreased the growth rate of chicks reared in clean quarters. This decrease was overcome by addition of penicillin to the diet. The feeding of faecal clostridia to chicks reared in old quarters where the clostridial population was high failed

to depress the growth. Penicillin produced a growth stimulation only in cases where there was a decrease in the clostridial count per g. of faeces. This indicated that one of the ways in which antibiotics stimulate growth is through an action on the anaerobic clostridial microflora.

VOELKER, H. H., ALLEN, R. S., JACOBSON, N. L. & BLAKE, J. T. (1954). ***In vivo* (dairy calves) and *in vitro* studies with surface-active agents.** — *J. Dairy Sci.* **37,** 737-743. [Authors' summary slightly modified.] **4107**

The feeding of several surface-active agents had no significant influence on the growth rates of dairy calves when fed either in a milk replacement diet or in a concentrate mixture. Moreover, the detergents had no consistent effect on hay and concentrate consumption, incidence of diarrhoea, faecal pH, blood plasma fat levels, nor on haemoglobin, erythrocyte, leucocyte and differential leucocyte values of the blood. The addition of surface-active agents and of penicillin to distilled water and to rumen fluid caused relatively large reductions in surface tension, whereas aureomycin and terramycin had no appreciable influence on the surface tension of these liquids.

WISSLER, R. W., BETHARD, W. F., BARKER, P. & MORI, H. D. (1954). **Effects of polyoxyethylene sorbitan monolaurate (Tween 20) upon gastrointestinal iron absorption in hamsters.**—*Proc. Soc. exp. Biol., N.Y.* **86,** 170-176. [Authors' summary modified.] **4108**

In three experiments with adult hamsters fed a fortified bread ration containing 5% "Tween 20" for 8–20 weeks there was a consistent increase in gastro-intestinal absorption of a test dose of radio-active iron (Fe^{59}) during the subsequent 3 days. Increases in the isotope were noted especially in the caecum and large intestine, the blood, bone marrow and liver. Concomitantly less radio-active iron appeared in the excreta of the Tween fed animals than in those of control animals. This evidence of increased iron absorption was accompanied by the presence of iron pigment in the caecal mucosa, mesenteric lymph nodes and liver and by an increase in chemically demonstrable iron in the caecum and liver.

BRANION, H. D. & HILL, D. C. (1954). **Detergents and chick growth.**—*Poult. Sci.* **33,** 62-66. [Authors' summary modified.] **4109**

The individual inclusion of each of six commercial synthetic detergents and one soap, at a 0·5% level in the rations of chicks (day-old at the start of the experiment), failed to elicit an increased growth response over the control to 12 weeks of age. However procaine penicillin at a level of 10 p.p.m. also failed to elicit a response.

BRAITHWAITE, D. P. (1952). **The hydrocyanic acid content of perennial Kavirondo sorghum.** —*E. Afr. agric. J.* **18,** 54-58. **4110**

B. determined the hydrocyanic acid content of young, maturing and mature perennial Kavirondo sorghum [a hybrid between *Sorghum verticiflorum* and *S. niloticum*] in Kenya, and of the aftermath resulting from cutting at various stages in the season. Mature sorghum was a safe feeding stuff, and young growth from seed, under moist conditions was unlikely to prove harmful. Young aftermath during the dry season, however, had a dangerously high HCN content, and the authors presumed that if young growth from seed were subjected to dry conditions it too might be dangerous, though they did not demonstrate this.—A.S.

PETROVIĆ, K. M. JAKŠIĆ, B. L. (1953). **[Sudden death in cattle, probably due to deficient diet.]**—*Vet. Glasn.* **7,** 586-589. [In Serbian. Abst. from German summary.] **4111**

The authors described a form of sudden death in oxen during heavy work, such as ploughing. Bacteriological and P.M. examinations were negative, except for the occasional finding of pericardial petechiae. Histological examination of the heart revealed either chronic myocarditis or purely degenerative changes in the myocardium. They suggested that an unspecified dietary deficiency was the cause.

—R.M.

WISE, M. B., BARRICK, E. R., WISE, G. H. & OSBORNE, J. C. (1954). **Effects of substituting xylose for glucose in a purified diet for pigs.**—*J. Anim. Sci.* **13,** 365-374. [Abst. from authors' summary.] **4112**

An account of two experiments to compare xylose and glucose as sources of carbohydrate in the diets of young pigs: (i) a growth-performance study using 4 replications of pigs, fed three purified diets containing 37·4% of sugar, glucose, xylose, or a 50–50 mixture of the two; and (ii) studies of nitrogen retention and sugar recovery as well as of growth-performance, data being obtained from 5 pairs of pigs, pair-fed comparative diets containing 56%, respectively, of glucose or of xylose.

Both studies indicated that pigs were able to utilize glucose to a greater degree than xylose.

Cataract formation resulted after feeding a

diet containing xylose as 56% of the dry matter. Voluntary activity was decreased, and the colour of the coat was altered from deep red to yellowish-red in pigs fed xylose.

SWART, F. W. J. (1954). Verwerkingsmogelijkheden voor dierlijke vetten. **[Possible uses of animal fats in animal nutrition.]**—*Tijdschr. Diergeneesk.* **79,** 601-607. [English, French and German summaries.] **4113**

A discussion on literature without references.—C. A. VAN DORSSEN.

HOFLUND, S., HOLMBERG, J. & NIHLÉN, H. (1953). **On the aetiology, pathogenesis and clinical picture of fat necrosis in cattle.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 642-652. Discussion: Part II. pp. 309-315. [In English. French and German summaries.] **4114**

In Part II of the *Proceedings,* S. Hoflund supplemented this paper [*V.B.* **24,** 1189] with further remarks on fat necrosis in cattle and a report of two more cases. J. Holmberg described and illustrated the results of chemical and physical examination of fat from normal and necrotic tissue. Other speakers discussed the aetiology of fat necrosis.—R.M.

DAVIS, C. L. & GORHAM, J. R. (1954). **The pathology of experimental and natural cases of " yellow fat " disease in swine.**—*Amer. J. vet. Res.* **15,** 55-59. [Authors' summary modified.] **4115**

"Yellow fat" disease in pigs is characterized by a yellow to yellowish brown discoloration of the adipose tissue, usually with a fish-like odour of the flesh. It is frequently associated with the feeding of excessive amounts of fish or fish products containing highly unsaturated fatty acids.

Microscopically, the yellow fat shows a deposition of foreign fat globules in the interstices of the adipose tissue, some of which have acid-fast characteristics.

The addition of vitamin E supplement to a high fish diet was shown to reduce the formation of acid-fast pigment in an experimental lot of pigs. Perhaps a higher level of vitamin E might have entirely prevented the occurrence of pigment.

ENDER, F. & HELGEBOSTAD, A. (1953). **Yellow fat disease in fur bearing animals.** — *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 636-642. Discussion: Part II. p. 308. [In English. French and German summaries.] **4116**

Introducing their paper [*V.B.* **24,** 517], one of the authors referred to their previous work which eliminated vitamin E and vitamin K deficiencies as cause of yellow fat disease.

—R.M.

WILGRAM, G. F., HARTROFT, W. S. & BEST, C. H. (1954). **Dietary choline and the maintenance of the cardiovascular system in rats.** —*Brit. med. J.* July 3rd, 1-5. [Authors' summary copied *verbatim.*] **4117**

Young male rats fed diets low in choline developed cardiac changes which were initiated by the deposition of stainable fat droplets in myocardial muscle, and which rapidly developed into widely distributed focal areas of frank necrosis. Liberation of fat droplets from necrotic muscle cells permitted their removal by tissue macrophages, so that the more advanced the necrosis the less prominent were the deposits of stainable fat. Choline chloride prevented the accumulation of significant deposits of fat and the development of cardiac necrosis.

The incidence of the lesions varied directly with the severity of the choline-deficient regimen, and therefore ran parallel to the degree of fat accumulation in the liver and the frequency of haemorrhagic renal lesions. Changes in heart muscle in 25 rats in which gross and microscopic changes did not develop in the kidney suggested that the effect of choline-deficiency on the myocardium may be independent of its renal necrogenic action.

Cardiac damage developed in a few rats of a series fed a fat-free choline-deficient diet. The addition of high levels of fat in these diets greatly increased the number of animals with affected hearts. All types of dietary fat studied were not equally effective. Of the synthetic triglycerides tested, those of lauric acid (35%) in a choline-deficient diet produced the highest proportion of cardiac lesions, while tricaproin, tricaprylin, trimyristin and tripalmitin were less effective. Of naturally occurring fats, beef fat and lard resulted in more cardiac damage in choline-deficient rats than did corn or coconut oil. The effectiveness of compounds of lauric acid in producing this type of cardiac damage confirms earlier observations of Kesten, Salcedo, and Stetten (1945), who first observed necrosis of heart muscle in rats fed choline-deficient diets containing 35–40% of the ethyl ester of lauric acid.

These findings, together with others concerning the accumulation of fat in coronary arteries, of choline-deficient rats (Hartroft, Rideout, Sellers and Best, 1952), and the frequent development of haemorrhagic renal lesions in

similar animals, suggest that adequate supplies of lipotropic factors may be necessary for the maintenance not only of a healthy liver but also of normal cardiovascular and renal systems in rats.

The authors propose that the definition of the term "lipotropic" be broadened to include the prevention of abnormal deposits of stainable fat in all organs of choline-deficient animals in which it has been demonstrated that this result is the direct outcome of lack of choline and its precursors.

Shull, K. H., Mann, G. V., Andrus, S. B. & Stare, F. J. (1954). **Response of dogs to cholesterol feeding.**—*Amer. J. Physiol.* **176,** 475-482. **4118**

In contrast to other species, the development of hypercholesteraemia in dogs was not influenced by the level of sulphur-containing amino-acids in the diet. The effect might have been obscured by the very high intake of cholesterol. The authors discussed species differences in liability to develop atherosclerosis, in relation to qualitative differences in blood lipoid fractions.—P. H. Herbert.

Davies, J. (1954). **Cytological evidence of protein absorption in fetal and adult mammalian kidneys.**—*Amer. J. Anat.* **94,** 45-65. **4119**

D. demonstrated an association between the occurrence of proteinuria, whether physiological, pathological or experimentally induced, and the appearance of hyaline (periodic acid-Schiff staining) granules in the proximal tubules. He suggested that these granules indicate an effective process of protein reabsorption rather than a degenerative change.—P. H. Herbert.

MacNaught, M. L., Owen, E. C., Henry, K. M. & Kon, S. K. (1954). **The utilization of non-protein in the bovine rumen. VIII. The nutritive value of the proteins of preparations of dried rumen bacteria, rumen protozoa and brewer's yeast for rats.**—*Biochem. J.* **56,** 151-156. **4120**

The authors described the preparation of dried bacterial and protozoan samples from bovine rumen. They reported biological values and true digestibility values which suggest that conversion of bacterial or dietary protein into protozoan protein is advantageous to the host animal.—P. H. Herbert.

I. Kornberg, H. L., Davies, R. E. & Wood, D. R. (1954). **The breakdown of urea in cats not secreting gastric juice.**—*Biochem. J.* **56,** 355-363. **4121**

II. Kornberg, H. L., Davies, R. E. & Wood, D. R. (1954). **The activity and function of gastric urease in the cat.**—*Ibid.* 363-372. **4122**

I & II. Urease activity *in vivo* was demonstrated in the cat. The enzyme is active in the secreting stomach and also in the head region. In both areas it is probably of bacterial origin. The role of gastric urease is not an essential one in normal physiological activity. —P. H. Herbert.

Hansard, S. I., Comar, C. L. & Davis, G. K. (1954). **Effects of age upon the physiological behavior of calcium in cattle.** — *Amer. J. Physiol.* **177,** 383-389. [Authors' summary modified.] **4123**

The authors studied the absorption and movement in the body of labelled calcium as a function of age, utilizing 36 cattle. They discussed the use of Ca^{45} data for the interpretation of the behaviour of the stable calcium normally present. The typical excretion rate of unabsorbed calcium was found to show about a 3-fold increase for the aged animals. Equations presented for the disappearance of Ca^{45} from blood as a function of age, indicated that the rate of exchange of calcium ions between blood and other compartments decreased significantly with increasing age. From the comparative specific activities of soft tissue and bone it was possible to estimate the relative percentage of exchangeable calcium in the skeleton of the animals; this value tended to decrease with age.

Lindblad, G. S., Slinger, S. J. & Motzok, I. (1954). **Effect of aureomycin on the calcium and phosphorus requirements of chicks and poults.**—*Poult. Sci.* **33,** 482-491. [Abst. from authors' summary.] **4124**

Aureomycin improved the wt. of chicks and poults in all cases. The more inadequate the ration in calcium and phosphorus the greater was the percentage increase in wt. due to the antibiotic.

Aureomycin appeared to increase the requirement for P of male but not of female chicks. The Ca and P requirements of female poults were not appreciably altered by the addition of aureomycin to the diet. However, a statistically significant interaction was shown between P and sex, suggesting that male poults have a higher requirement for inorganic P than the generally recommended levels of 0·4%.

In general, aureomycin improves the feed efficiency of chicks and poults, but when the level of Ca was raised above 1·0 and 2·0% for

chicks and poults, respectively, the efficiency of feed utilization was decreased whether or not the antibiotic was fed.

SCHOFIELD, F. W. (1953). **The etiology of muscular dystrophy in calves and lambs.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 597-601. Discussion: Part II. pp. 298-300. [In English. French and German summaries.] **4125**

[See also *V.B.* **24,** 533.] In discussing this paper five speakers described their own experience of muscular dystrophy in Sweden, Norway, and New Zealand, and discussed the role of phosphates in the aetiology and treatment of this condition.—R.M.

MILMAN, A. E. & MILHORAT, A. T. (1953). **Metabolic patterns in experimentally induced muscular dystrophy.**—*Proc. Soc. exp. Biol., N.Y.* **84,** 654-660. [Authors' summary modified.] **4126**

The authors studied the metabolic patterns of rabbits with muscular dystrophy due to vitamin E deficiency and to chronic overdosage with cortisone. Both conditions are characterized by an increased urinary excretion of creatine, nitrogen, potassium and calcium. These urinary losses are quantitatively greater in cortisone induced dystrophy, although the clinical symptoms of muscular weakness and diminished life span were most marked in vitamin E deficiency.

The effect of administration of pituitary growth hormone on both types of experimental muscular dystrophy was studied. Combined with cortisone in large doses, it exacerbated the metabolic abnormalities. Smaller doses partially curtailed the increase in nitrogen excretion. Superimposed on vitamin E deficiency, growth hormone was without effect clinically and mildly active with respect to nitrogen storage for a few days.

Both cortisone and growth hormone were diabetogenic in the rabbit.

MEYER, J. H. & WEIR, W. C. (1954). **The tolerance of sheep to high intakes of sodium chloride.** — *J. Anim. Sci.* **13,** 443-449. [Authors summary modified.] **4127**

Female sheep were fed rations with a sodium chloride content of 0·5, 4·8, 9·1, and 13·1% for 253 days during growing and fattening, breeding, gestation, and early lactation. These levels of sodium chloride in the ration did not cause any significant difference between lots during the growing and fattening period. There was no difference in wt. gain between groups during breeding and gestation. Wt. loss during lactation was greater to a highly significant degree for the ewes on 13·1% NaCl. There was some decrease in number of lambs raised by the ewes on the highest salt intake. The addition of large amounts of NaCl to the ewes' rations did not affect the gains of the lambs. High NaCl intakes did not affect blood haematocrit readings or serum albumin and sodium, but an increase in blood serum chloride was observed. The milk protein, sodium, and potassium did not change; however, milk chlorides increased for all the lots on high NaCl intake.

MILLS, C. F. (1954). **Copper complexes in grassland herbage.** — *Biochem. J.* **57,** 603-610. [Author's summary modified.] **4128**

Herbage samples from pastures where swayback occurred, and from normal pastures were subjected to organic solvent extraction with a series of solvents of gradually increasing dielectric constant. The quantities of copper extracted by different solvents were compared and the results discussed.

The solubility of herbage copper in water was investigated by the use of a dialysis procedure. The results indicated that rather less water-soluble copper is present in the swayback pastures than in normal herbage.

Samples were extracted with dilute aqueous solutions of chelating agents (substances forming non-ionic, non-polar complexes with many metallic ions). Seasonal variations in the solubility of herbage copper were demonstrated particularly in the case of the normal samples examined. The greater part of the copper in both "swayback" and normal pastures appears to be bound in a form which is more stable than the copper-glycine complex.

The copper complexes present in the water soluble component of herbage were examined by the use of filter-paper partition chromatography.

M. discussed the practical significance of these findings.

GUBLER, C. J., TAYLOR, D. S., EICHWALD, E. J., CARTWRIGHT, G. E. & WINTROBE, M. M. (1954). **Copper metabolism. XII. Influence of manganese on metabolism of copper.** — *Proc. Soc. exp. Biol., N.Y.* **86,** 223-227. [Authors' summary modified.] **4129**

Administration of large amounts of manganese to rats was associated with an increase in the concentration of copper in plasma and brain, a decrease in the urinary excretion of copper, a decrease in the conc. of copper in the kidneys, no alteration in the conc. of copper in the liver, and microcytic, hypochromic anaemia.

The total amount of copper in the body was not increased. Administration of large amounts of copper was accompanied by an increase in total body copper and an increase in the conc. of copper in the plasma, urine, liver, and kidneys but not in the brain. Anaemia did not occur. Simultaneous administration of large amounts of both manganese and copper resulted in a marked increase in total body copper, an increase in the conc. of copper in the plasma, liver, kidneys and brain, and microcytic, hypochromic anaemia. The total amount of copper in the body of these animals was twice as great as in rats given the same amount of supplemental copper alone. The conc. of copper (μg./100g. body wt.) was increased 5-fold. The authors suggested that manganese may form a complex with copper which makes the latter unavailable or that in some manner it blocks the action of copper-containing enzymes.

Tribe, D. E., Bond, J. M. & Osborne, A. D. (1954). **Response of cobalt-deficient sheep to oral administration of penicillin.** [Correspondence.]—*Nature, Lond.* **173,** 728. **4130**

The authors investigated the effects of the oral administration of penicillin on the cobalt and vitamin B_{12} requirements of sheep. Two sheep from a cobalt-deficient farm were fed hay and concentrates grown from cobalt-deficient soil, and a daily record was kept of the consumption of concentrates. After 5 weeks the sheep were given daily doses of penicillin (50,000 units of the sodium salt of benzyl penicillin): this treatment had no effect for three weeks, but at the fourth week both animals began to eat more concentrates and put on weight just as they would have done had cobalt or vitamin B_{12} been administered. The authors assumed that the penicillin had brought about a change in the ruminal flora which encouraged the bacterial synthesis of vitamin B_{12}.—A.S.

Andrews, E. D. & Anderson, J. P. (1954). **Responses of cobalt-deficient lambs to cobalt and to vitamin B_{12}.**—*N.Z. J. Sci. Tech.* Sect. A. **25,** 483-488. [Authors' summary modified.] **4131**

Unthrifty lambs grazing a Co-deficient pasture responded at least equally as well to vitamin B_{12} injected at the rate of 100 μg. a lamb a week as to cobalt dosed orally at the rate of 7 mg. a lamb a week. Superior av. wt. gains in favour of vitamin-B_{12}-injected lambs were non-significant.

Lambs responded significantly to 1,000 μg. vitamin B_{12} administered orally each week, but at the dose rate given, growth was sub-optimal.

There was a brief response to single massive injections of 1,000 μg. vitamin B_{12}, but after 2 weeks there was continued deterioration in condition.

The authors discussed these findings in relation to the diagnosis and control of cobalt deficiency disease.

Pierce, A. W. (1954). **The effect of intake of carotene on reproduction in sheep.**—*Aust. J. agric. Res.* **5,** 470-483. **4132**

Symptoms of vitamin A deficiency, low blood vitamin A and night blindness took at least 16 months to appear when mature sheep were fed on a diet deficient in carotene (less than 10 μg. carotene per kg. body wt. per day).

An intake of 50 μg. carotene per kg. body wt. per day appeared sufficient for successful reproduction in mature ewes, if the main source of carotene was lucerne meal. A suppl. of carotene in oil caused a smaller rise in blood vitamin A than an equiv. amount of lucerne meal.

—A. W. Blackshaw.

Møller, H. C. (1954). Vandopløselige A- og D-vitaminer. [**" Water-soluble " A and D vitamins (emulsified with " tween 80 ").**]—*Medlemsbl. danske Dyrlaegeforen.* **37,** 118-119. **4133**

A note on the use of an injectable solution of vitamins A and D in "tween 80" (a surface-active agent), giving the dosages for horses and adult cattle, calves, sows and gilts, and for young pigs. It should not be used for dogs as it causes a severe drop in blood pressure.

—F.E.W.

Bacigalupo, F. A. & Luecke, R. W. (1954). **Some mineral changes in the skeletal and heart muscles of vitamin E deficient lambs.**—*J. Anim. Sci.* **13,** 245-248. [Abst. from authors' summary.] **4134**

Analysis for various inorganic elements of skeletal and heart muscles from lambs fed vitamin E deficient and vitamin E supplemented diets revealed that in skeletal muscles from vitamin E deficient lambs there was a higher conc. of sodium and calcium and a lower conc. of potassium than in those from the controls. Heart muscle from the deficient lambs contained more calcium and phosphorus than that from the controls.

Lehr, D., Churg, J. & Milora, R. (1954). **Influence of alpha-tocopherol upon development of cardiovascular necrosis and hypertension in the rat.**—*Proc. exp. Biol., N.Y.* **85,** 615-624. [Authors' summary slightly modified.] **4135**

Disseminated muscular necrosis following experimental nephropathy produced by a single excessive dose of sodium acetyl sulphathiazole in albino rats maintained on complete rations, was not beneficially influenced by the presence of excessive amounts of α–tocopherol. On the contrary, this drug appeared responsible for a higher incidence of advanced lesions in the aorta, coronary arteries, and stomach. Concomitant renal hypertension was not alleviated by the presence of alpha-tocopherol in excess. In normotensive rats large dosages of this compound may induce moderate hypertension.

SINGSEN, E. P., MATTERSON, L. D., KOZEFF, A., BUNNELL, R. H. & JUNGHERR, E. L. (1954). **Studies on encephalomalacia in the chick. I. The influence of a vitamin E deficiency on the performance of breeding hens and their chicks.**—*Poult. Sci.* **33,** 192-201. [Authors' summary modified.] **4136**

Data obtained during the first year of a 3-year study of the encephalomalacia problem in chicks indicated that very low levels of vitamin E intake, as reflected by low blood tocopherol levels, do not affect egg production or adult mortality over a period of 9 months. The addition of α–tocopherol to breeding rations deficient in several other vitamins, resulted in a highly significant increase in fertility. This response to α–tocopherol was not obtained when a mixture containing ascorbic acid, vitamin K and B-complex vitamins was added to the breeding ration. Data of the total blood tocopherol levels of day-old chicks definitely indicate that one or more of the vitamins in the above mixture was assisting in the utilization of tocopherols by either the breeding hen or the developing embryo.

Several cases of encephalomalacia were observed in unhatched embryos and day-old chicks.

Chicks hatched from vitamin E deficient breeding hens, and fed a vitamin E low diet containing 2% of oil of fish origin, consistently had a 33 to 67% mortality, largely due to encephalomalacia; it could be prevented by the addition of high levels of α–tocopherol to the chick diet. The addition of α–tocopherol to breeder diets having low levels of vitamin A and D in fish-liver oil markedly reduced the chick mortality from encephalomalacia, but did not prevent it entirely when the chicks were fed the vitamin E low ration containing added oil. The addition of α–tocopherol to breeding hens' diets having low levels of vitamin A and D in fish-liver oil did prevent the appearance of encephalomalacia in the chicks when the latter were fed a normal ration containing 2% of added vitamin A and D in fish-liver oil. It was necessary to add both α–tocopherol and the complex vitamins mixture to the breeding ration in order to reduce total mortality to its lowest level.

In 13 out of 18 comparisons, chicks hatched from hens whose diet was supplemented with α–tocopherol were heavier at the end of the experimental period than chicks hatched from hens not receiving the supplement.

The incidence of encephalomalacia was approx. twice as high in the male as in the female chicks.

STURKIE, P. D. (1954). **Effects of acute thiamine deficiency on the electrocardiogram of the chick.**—*Poult. Sci.* **33,** 508-510. [Author's summary modified.] **4137**

In White Leghorn male chicks 2 and 12 days old fed a diet free from thiamine heart abnormalities began to develop within 7 to 10 days. Within 15 days approx. half of the chicks were dead, and within 21 to 28 days nearly all were dead. The abnormalities observed in the E.C.G. in decreasing frequency of occurrence were: bradycardia, depression of the S–T segment, sinus arrhythmia, sinus arrest, ectopic beats, and A-V dissociation with nodal rhythm.

SLINGER, S. J. & PEPPER, W. F. (1954). **The effect of antibiotics on the turkey poults' need for supplementary biotin and pantothenic acid.** — *Poult. Sci.* **33,** 633-637. [Authors' summary slightly modified.] **4138**

The feeding of an aureomycin-vitamin B_{12} suppl. to turkey poults brought about marked remission of symptoms including poor growth, broken feathers, dermatitis, perosis and diarrhoea. Penicillin and terramycin reduced the requirement of the poult for biotin. Penicillin also reduced the requirement for calcium pantothenate.

The "sparing" effect of antibiotics on the requirement of the poult for biotin and pantothenic acid offers a partial explanation for the ability of such drugs to bring about remission of the deficiency symptoms. Improved utilization of other vitamins, such as niacin, is probably also involved.

JASPER, D. E. (1953). **Prolonged insulin hypoglycemia in sheep.**—*Amer. J. vet. Res.* **14,** 209-213. **4139**

Hypoglycaemia was induced in 8 ewes by injections of insulin and protamine insulin. Where hypoglycaemia was maintained for periods up to 14 hours there was lethargy with

tremors and severe muscular twitching; after 14 hours the animal passed into a second stage of extreme lethargy with blindness, uncontrolled mastication movements, and salivation (av. duration 3 hours). Then followed a third stage in which these symptoms became more severe and were associated with shallow breathing and inability to stand. Of 3 ewes observed as far as the third stage and then given glucose one recovered promptly, one recovered slowly, regaining vision after 120 hours, and the third died. —A.S.

I. Moustgaard, J. & Thorbek, G. (1949). Undersøgelser over jodkaseinets virkning på maelkesekretionen og stofskiftet hos køer. **[Influence of iodinated casein and sex hormones on lactation and metabolism in cows.]** —*Beretn. Forsøgslab. Kbh.* No. 240. pp. 1-45. [English and French summaries.] **4140**

II. Poulsen, E. (1949). Undersøgelser over fraktioneret jodkaseins og kønshormoners indflydelse på maelkekirtelens funktion hos geder. **[Influence of fractionated iodinated casein and of sex hormones on the function of the mammary gland in goats.]**—*Ibid.* pp. 47-110. [English and French summaries.] **4141**

I. In 3 normal pregnant cows in declining lactation, fed a daily supplement of 25 g. iodinated casein for 87 days, there was restlessness with considerable sweating and the pulse and respiration rates rose. The blood count and sedimentation rate were unchanged. Butterfat production increased by 35–55%; milk yield also increased. Body wt. dropped considerably, though sufficient extra food was given to cover increased production. Heat production rose by 30%. The cost of the increased milk output was about 3 times that of the normal output. The feeding of a copper carbonate supplement did not counteract the increased metabolism.

II. To eliminate thyroxine, the fraction of iodinated casein which increases metabolism, P. separated iodinated casein into 2 fractions by treatment with sodium hydroxide and barium chloride to give fraction A, and by mixing the filtrate with acetic acid up to pH5 to give fraction B. In 4 goats treated with "A" there was considerable loss of body wt., the milk yield being either unaffected or increasing transitorily with subsequent decrease during or after treatment. In 5 of 6 goats injected i/m with 0·5 g. of "B" there was a considerable increase in milk yield, with an increase in butterfat in most cases; the increased yield was maintained for 3–8 weeks after cessation of treatment. There was only slight loss of body wt.

In small groups of goats stilboestrol, injected alone, depressed milk yield, but increased the butterfat and protein content. By regulating the dosage to 0·5 mg. and combining the treatment with "B" fraction of iodinated casein, P. found that the increase in yield could be maintained together with the increase in butterfat and protein content.—F.E.W.

Westermarck, H. W. (1953). **Effect of ACTH on mineral levels as well as on protein fractions and on the eosinophil count in the blood of cows during paresis.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 540-543. Discussion: Part II. pp. 278-284. [In English. French and German summaries.] **4142**

[See also *V.B.* **24,** 1610.] In discussing this paper, O. Garm described work carried out at Stockholm on the blood picture and adrenal and pituitary glands in milk fever, and R. B. Holcombe described differences in adrenal cortex activity between normal cows and cows with milk fever and retained placenta.—R.M.

Talsma, D. (1954). De behandeling van acetonaemia met een A.C.T.H.-preparaat met geprolongeerde werking. **[Treatment of acetonaemia in cows with a long-acting preparation of A.C.T.H.]** — *Tijdschr. Diergeneesk.* **79,** 620-623. [English, French and German summaries.] **4143**

T. stated that good results were obtained in cows with acetonaemia by two injections each of 40 I.U. of a formulation of A.C.T.H. with prolonged activity ("Cortrophine Z"), or by a single inj. of 160 I.U. Improvement occurred after 24 hours, in most cases without relapse. —C. A. van Dorssen.

See also absts. **4212** (report, West of Scotland Agricultural College); **4219** (book, endosymbiotic microflora); **4221** (proceedings of conference on metabolic interrelations).

DISEASES, GENERAL

Christenson, I. (1953). **Measures suggested for the establishment of universal border regulations as a safeguard against the introduction of contagious animal disease.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part 1. Vol. 1. pp. 313-320. Discussion: Part II. pp. 231-234. [In English. French and German summaries.] **4144**

C. introduced his paper [*V.B.* **24,** 199] by emphasizing the importance of international

control of the spread of infectious diseases of animals.—R.M.

Bouvier, G., Burgisser, H. & Schneider, P. A. (1953). Observations sur les maladies du gibier, des oiseaux et des poissons en 1952. **[Diseases of game, wild birds and fish in Switzerland during 1952.]** — *Schweiz. Arch. Tierheilk.* **95,** 626-630. [In French.] **4145**

Notes of the P.M. findings in the carcasses of various game and smaller wild animals sent from all parts of Switzerland. In roedeer (*Capreolus capreolus*) verminous bronchitis and strongyle infestations of the intestine were frequent and often fatal. In one region a number of roedeer died from "spring diarrhoea," a condition of unknown aetiology which may, the authors think, be attributable to mistletoe poisoning, though several roedeer which were fed mistletoe did not develop it.—A.S.

Roemmele, O. (1954). Abnorme Gehörnbildung bei Rehböcken und akute Bleivergiftung bei Rindern, ein Beitrag zur Differentialdiagnose der Tollwut. **[Differential diagnosis of rabies, lead poisoning in cattle, and nervous symptoms associated with malformations of the horns in roebucks.]**—*Dtsch. tierärztl. Wschr.* **61,** 58-59. **4146**

Nervous symptoms, which had given rise to a suspicion of rabies, were caused by a brain abscess which in addition caused abnormal development of the horns of a roebuck, and by lead poisoning in a herd of cattle.—R.M.

Larrivee, G. P. & Elvehjem, C. A. (1954). **Disease problems in chinchillas.**—*J. Amer. vet. med. Ass.* **124,** 447-455. **4147**

The authors' studies on the nutritional requirements of chinchillas (*Chinchilla laniger*) were disturbed by an epidemic of enteritis with septicaemic complications. *Pseudomonas pyocyanea* and *Proteus mirabilis* were isolated from faecal and organ samples, and both proved lethal on i/p inj. into rats and mice. *Ps. pyocyanea* has frequently been reported to be pathogenic for the chinchilla. Under damp conditions there was a tendency to infection of the skin of the face and occasionally of other parts of the body with an unidentified species of *Trichophyton*. *Aspergillus flavus* was isolated from the small intestine of one animal, the liver of another, and pus from the affected eye of a third.—A.S.

Dimić, J. M. (1953). **The surgical treatment of periodical ophthalmia in horses.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 2. pp. 929-932. Discussion: Part II. pp. 365-366. [In English. French and German summaries.] **4148**

In discussing D.'s paper [*V.B.* **24,** 2020], O. Überreiter described an ophthalmoscope for the examination of the eyes of large and small animals.—R.M.

Graham, W. R. (1953). **The pathology of shipping fever in feedlot cattle.**—*J. Amer. vet. med. Ass.* **123,** 198-203. **4149**

P.M. examination of 57 beef cattle that died from "shipping fever" revealed bilateral fibrinous pneumonia in 53, usually with severe bronchitis. Changes in organs and tissues of other than the respiratory system were probably due to toxaemia and septicaemia. No virus inclusion bodies were demonstrable.

—C. A. E. Briggs.

Lukashov, I. I. (1964). **[Epidemiology and clinical features of infectious rhinitis in piglets.]**—*Veterinariya, Moscow.* **31,** No. 4. pp. 32-34. [In Russian.] **4150**

A conventional account of infectious rhinitis in piglets.—A. Mayr-Harting.

Moore, G. R., Riley, W. F., Westcott, R. W. & Conner, G. H. (1954). **Displacement of the bovine abomasum.** — *Vet. Med.* **49,** 49-51. **4151**

The authors recorded 33 cases of this condition, the abomasum having become impounded between the rumen and the left abdominal wall. In 31 the onset of symptoms occurred in late pregnancy or soon after parturition. They described the symptoms, diagnosis, prognosis and surgical treatment.—C. A. E. Briggs.

Morin, G., Gastaut, H., Vigouroux, R. & Naquet, R. (1952). Reproduction expérimentale de l'épilepsie de type "psychomoteur" chez le chat. **[Reproduction of "psychomotor" epilepsy experimentally in the cat.]**—*C. R. Acad. Sci. Paris.* **235,** 1561-1562. **4152**

Epileptiform convulsions similar to those seen in psychomotor epilepsy of human beings were observed in cats following electrical stimulation of the amygdaloid nucleus by means of electrodes previously inserted into that region, or following chronic irritation caused by aluminium paste injected into the same region.

—R.M.

POISONS AND POISONING

Bustad, L. K. (1953). **Toxicity of radioiodine.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 469-473. Discussion: Part II. pp. 265-266. [In English. French and German summaries.] **4153**

[See also *V.B.* **24,** 1225.] B. in answering questions, stated that symptoms similar to those resulting from surgical removal of the thyroid gland were seen in the lambs of ewes which had been given radio-active iodine during pregnancy and during lactation. In some cases the conc. of radio-active iodine in the thyroid gland of the foetus of ewes fed a sub-toxic dose of the isotope exceeded what B. referred to as the max. permissible conc.—R.M.

Stormorken, H. (1953). **Methemoglobinemia in domestic animals.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 501-506. Discussion: Part II. pp. 269-270. [In English. French and German summaries.] **4154**

In Part II of the *Proceedings,* S. gave a graph illustrating his paper [*V.B.* **24,** 1227], and a description of a test for excess methaemoglobin in the blood.—R.M.

Wagener, K. (1953). Die Hyperkeratose des Rindes (X-Disease), eine Vergiftung durch Industrie-Produkte. **[Hyperkeratosis, a poisoning by industrial products.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 512-517. Discussion: Part II. pp. 270-272. [In German. English and French summaries.] **4155**

In supplementary remarks on his paper [*V.B.* **24,** 1653] W. referred to agents other than wood preservatives that may cause hyperkeratosis and to his work on the use of dogs, cats and chickens as experimental animals in the study of this disease. J. Hinterman referred to his experience of hyperkeratosis in French Morocco [*V.B.* **23,** 526].—R.M.

Gardner, C. A. & Bennetts, H. W. (1953). **Poison plants of Western Australia. The toxic species of the genus *Euphorbia*.** — *J. Dep. Agric., W. Aust.* **2,** 527-531. **4156**

The authors gave descriptions and recorded the distribution in Western Australia of *E. boöphthona* (Gascoyne River poison or tree balsam), *E. clutioides* (desert spurge) and *E. Drummondii* (mat balsam). *E. boöphthona* has been responsible for considerable losses among stock and deaths have been attributed to the other two species. The active principle in *E. Drummondii* was shown to be a cyanogenetic glucoside, and the same is probably true of *E. boöphthona* and *E. clutioides.*

—R. I. Sommerville.

See also absts. **4146** (lead poisoning in cattle); **4212** (report, West of Scotland Agricultural College).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Buck, R. C. (1953). **Regeneration of tendon.**—*J. Path. Bact.* **66,** 1-18. **4157**

B. studied the regeneration of divided Achilles tendons in rats under conditions of normal and reduced muscular tension, and in normal and scorbutic g. pigs, in which the tendons were severed at about their mid-points by a clean razor cut. He considered that the fine strands of fibrin which from an early stage connect the severed ends are stretched out by parting of the severed ends and have an orientating influence on the growth of fibroblasts in the regeneration tissue. He also considered that new tendon tissue arises from surrounding connective tissue, and that mature tendon cells are not capable of division to any important extent. The thickness of the regenerated tendon was proprotional to the muscular pull on it. The persistence of metachromatic ground substance probably represented the continued production of the "teno-mucoid" of normal tendon.

Cartilage and true bone tissue developed almost invariably in the regenerating tendon of rats at the points of junction of the new tendon material with the severed ends.—A.S.

Helle, W. (1953). L'influence du taux élevé de glucose sanguine sur le sommeil hibernal des hamsters (*Mesocricetus auratus*). **[Influence of the blood glucose level on hibernation in the hamster.]**—*Physiol. comp.* **111,** 190-196. [In French. English summary.] **4158**

It has long been known that there is a fall in the blood sugar levels of hibernating animals during hibernation. H. studied the effect on hibernating hamsters of intracardial injections of alloxan at a dosage (150 mg./kg.) sufficient to produce diabetes. The blood sugar levels resulting from this inj. varied, and were estimated by samples obtained by heart puncture. Hamsters rarely recovered from diabetes, usually dying 6–25 days after inj. None of those which had a high blood sugar level after inj. ever returned to hibernation before death.

—A.S.

ROTH, K. L. (1954). **Inhibition of hyaluronidase activity by factors associated with blood clotting.**—*Proc. Soc. exp. Biol., N.Y.* **85,** 533-537. [Author's summary slightly modified.] **4159**

Proconvertin preparations were found to function as hyaluronidase inhibitors. The inhibition of hyaluronic acid depolymerization by proconvertin required a co-factor and was enhanced by prior incubation with platelet material, which when tested alone is inactive. Tissue thromboplastin was also shown to inhibit hyaluronidase. This inhibitory activity seems to be inherent mainly in the lipoid moiety, and although always associated with the fraction containing the thromboplastic principle, was independent of its activity. It was suggested that the non-specific serum hyaluronidase inhibitor was associated with a part of the thromboplastic complex of the blood.

I. CRAINE, E. M. & HANSEN, R. G. (1954). **Apyrase activity of the mammary gland.**—*J. Dairy Sci.* **37,** 498-504. [Authors' summary modified.] **4160**

II. CRAINE, E. M. & HANSEN, R. G. (1954). **Phosphokinase activity of the mammary gland.**—*Ibid.* 505-511. [Authors' summary copied *verbatim.*] **4161**

I. The authors observed an enzymatic hydrolysis of adenosine triphosphate (ATP) by preparations of lactating rat mammary gland. The action was a linear function of time and protein concentration. Added magnesium ions depressed "apyrase" [a general term used by the authors for enzymes capable of releasing inorganic phosphate from adenylpyrophosphates] activity of homogenates made with phosphate buffer. In contrast, the addition of magnesium to water homogenates produced a stimulation. Fluoride inhibited the "apyrase" action of either preparation.

About 45% of the "apyrase" was extracted with water. The enzymatic activity of this extract was stimulated with either calcium or magnesium ions. The remaining "apyrase" was associated with cellular debris of the mammary tissue. Variation in the stimulation with ions suggested the presence of multiple enzymes. The enzymes in both fractions removed at least two phosphates from ATP.

II. Mammary gland tissue homogenates phosphorylated glucose, fructose, mannose, and maltose. Glucokinase activity was stimulated by the presence of added magnesium ion. Glucose and mannose were phosphorylated at a maximum rate at lower substrate concentrations than fructose and maltose. Phosphorylation of lactose and galactose did not occur at a significant rate. The evidence indicated that a direct phosphorylation of maltose occurred.

WRENN, T. R. & SYKES, J. F. (1953). **The response of hormonally induced bovine mammary tissue to anterior pituitary hormones.**—*J. Dairy Sci.* **36,** 1313-1318. [Abst. from authors' summary.] **4162**

The authors studied the lactation response of dairy heifers to the injection of anterior pituitary hormones. Milk production was found to be much greater when the udder was developed with stilboestrol than when a combination of stilboestrol and progesterone was used. Prolactin had only a slight stimulative effect, if any, upon the induced lactations. Thyrotropic hormone markedly stimulated lactation, but the best results were obtained with a growth hormone preparation. The latter was found to be contaminated with thyrotropic hormone which may have influenced the results, but growth hormone *per se* appeared to have galactopoietic effects.

DAVIDSON, W. M. & SMITH, D. R. (1954). **A morphological sex difference in the polymorphonuclear neutrophil leucocytes.**—*Brit. med. J.* July 3rd, 6-7. [Authors' summary modified.] **4163**

The authors described a morphological difference between polymorphonuclear neutrophile leucocytes in the male and those in the female. A solitary nuclear appendage with a drumstick form is found only in the female. Six such structures occur on an average in 227 neutrophiles in the female and none in 500 neutrophiles in the male. The typical drumstick structures have to be distinguished from certain other appendages found in both sexes. Photomicrographs of these structures were reproduced in 5 figures.

MERRILL, W. G. & SMITH, V. R. (1954). **A comparison of some cellular and chemical constituents of blood at time of parturition and after administration of adrenocorticotrophine.** — *J. Dairy Sci.* **37,** 546-551. [Abst. from authors' summary.] **4164**

The authors compared the reaction of leucocytes and blood sugar in cows following parturition and following the administration of 250 I.U. of A.C.T.H. The stress of parturition caused a diminution in the percentage of circulating lymphocytes and eosinophiles and an increment in the neutrophiles and blood sugar. Administration of A.C.T.H. caused similar

changes, generally of greater magnitude.

These findings indicate an increased secretion from the adrenal cortex in response to the stress of parturition in the cow.

GREATOREX, J. C. (1954). **Studies on the haematology of calves from birth to one year of age.**—*Brit. vet. J.* **110,** 121-133. **4165**

G. studied the haematological picture of 233 apparently normal healthy calves from blood samples withdrawn weekly from birth to the end of the first year. He observed the coagulation time, fragility of erythrocytes, blood sedimentation rates and packed cell volumes. The coagulation time varied from 2 to 11 min.; in the majority it was between three and seven and a half min. Erythrocyte fragility was 0·3–0·35% during the first 4 weeks of life, 0·4–0·45% from 1–4 months of age and 0·5% from the 20th week onwards. The blood sedimentation rate varied from 1·0 to 7·0, the majority having a rate in the range of 1·0 to 3. The packed cell volume ranged from 18·0 to 61·0 mm.; in the majority it was between 30·5–40 and 40·5–50 mm. He compared these findings with those obtained by Fraser [*V.B.* **1,** page 306].—F.E.W.

LE BARS, H., LEBRUMENT, J., NITESCU, R. & SIMONNET, H. (1954). Recherches sur la motricité du rumen chez les petits ruminants. IV. Action de l'injection intraveineuse d'acides gras à courte chaîne. **[Action on motility of the rumen of short-chain fatty acids injected intravenously.]** — *Bull. Acad. Vét. Fr.* **27,** 53-67. **4166**

Sodium acetate, propionate and butyrate, injected i/v into sheep at a dosage of 100 mg./kg. produced an immediate inhibition of ruminal action, followed by a gradual return to normal, and then a secondary inhibition, especially marked in the case of sodium acetate. The authors speculated that the initial inhibition was caused by an immediate humoral action of the substances on the rumen, while the secondary inhibition resulted from a similar action of metabolic derivatives of the substances. These results support the hypothesis that the functioning of the rumen is controlled by humoral means, as well as by nervous stimuli.—A.S.

FRIANT, M. (1954). Sur la forme du cerveau de l'éléphant (*Loxodonta africana* Blum), au cours de la vie prénatale. **[Morphology of the brain of the elephant during prenatal life.]** —*C. R. Acad. Sci., Paris.* **238,** 1534-1535. **4167**

In the early foetal stage the brain of the African elephant is elongated, lying in a long head recalling that of its oligocene forerunner *Moeritherium.*

The flexion of the mesencephalon which occurs as the brain develops towards the subspherical shape seen in the adult occurs exceptionally late by comparison with the primates and cetaceans, in which the adult brain shape is similar.—A.S.

WOLFGRAM, F. J. (1954). **Relative amounts of choline acetylase and cholinesterases in dorsal and ventral roots of cattle.**—*Amer. J. Physiol.* **176,** 505-507. **4168**

Relatively large amounts of acetylcholine, determined chemically by the hydroxylamine reaction, were formed when homogenates of ventral spinal roots of cattle were incubated with substrates and purified Co-enzyme A, but practically none was formed with homogenates of dorsal roots. Cholinesterases were present to the same extent in both ventral and dorsal roots. W. concluded that acetylcholine metabolism is not an indispensable component of all types of nervous activity.—A. ACKROYD.

BERGSTROM, W. H. & WALLACE, W. M. (1954). **Bone as a sodium and potassium reservoir.**—*J. clin. Invest.* **33,** 867-873. [Authors' summary modified.] **4169**

Average normal rat bone contains 152 milli-equivalents (mEq.) of sodium and 26 mEq. of potassium per kg. of fresh bone in excess of amounts accounted for by extra– and intracellular fluid. In rats depleted of Na and made acidotic by intraperitoneal dialysis against amonium chloride there was, within 48 hours, a decrease of bone Na amounting to 42 mEq. per kg. of bone and a decrease in K of 11 mEq. per kg. Changes in calcium were not proportionately large. Rats raised on a synthetic Na-free diet had bone Na values 61 mEq. per kg. below those of controls. No obligatory ratio of either Na or K to Ca was observed.

ENGFELDT, B. & HJERTQUIST, S.-O. (1954). **The functional relation between the thyroid and parathyroids and the effect of the thyroid on bone tissue.**—*Acta endocr., Copenhagen.* **15,** 109-118. [In English. Authors' summary slightly modified.] **4170**

The authors studied the effect of different functional states of the thyroid on the blood-phosphorus, the blood-calcium and the parathyroids in rats, and the effect of a thyroid preparation on the bone tissue of the dog. An increase in thyroid function brought about by the administration of thyrotropic hormone causes

a change in the metabolism of phosphorus and calcium, which in its turn leads to an increase in parathyroid function. Hypofunction of the thyroid due to thyroidectomy showed no definite effect on the blood-phosphorus, nor was it possible to show any statistically significant difference in the values for blood-phosphorus as between parathyroidectomized animals and animals in which both thyroidectomy and parathyroidectomy had been performed. The bone tissue in dogs treated with thyroid preparations showed only a slight increase of the normal processes of regeneration when studied by autoradiography and micro-radiography.

TALMAGE, R. V. & KRAINTZ, F. W. (1954). **Immediate changes in phosphate excretion following parathyroidectomy.** — *Proc. Soc. exp. Biol., N.Y.* **85,** 416-419. [Authors' summary modified.] **4171**

The authors studied parathyroid function in rats by determination of the changes produced immediately after surgical removal of the parathyroid glands. Phosphate excretion by the kidneys was markedly reduced within an hour in rats flooded with either calcium or phosphate ions after removal of the parathyroids. It was therefore concluded that in the rat the parathyroids at least in part control phosphate and calcium metabolism by a direct action on the excretion of phosphate by the kidneys.

LIEBELT, R. A. & EASTLICK, H. L. (1954). **The organ-like nature of the subcutaneous fat bodies in the chicken.**—*Poult. Sci.* **33,** 169-179. [Abst. from authors' summary.] **4172**

The authors made a general macroscopic study of the 16 subcutaneous fat bodies of the chick embryo and adult domestic fowl, with regard to anatomical location, relative size and shape, constancy and the relationship with specific blood vessels. They established a growth curve for the lipoid-extracted fat body of the lateral abdominal region. This fat depot appears to have the same characteristic growth pattern as that of the organs, systems and body of the fowl. The growth and development of this fat organ appear to be independent of its lipoid content.

Following the feeding of the dye, Sudan III, to laying hens, stained fat which was originally deposited in the yolk was found in the fat organs of 14-day embryos.

The subcutaneous fat bodies of the fowl appear to be specific anatomical structures with organ-like characteristics.

See also absts. **4012** (normal ruminal flora); **4073** (effect of pregnancy and sex hormones on complement and blood coagulation); **4119** (protein absorption in foetal and adult mammalian kidney); **4120** (utilization of non-protein in the bovine rumen); **4219** (book, endosymbiotic microflora); **4222** (book, physiology of muscular activity); **4223** (book, standard methods of clinical chemistry); **4224** (review of biochemistry); **4225** (biochemical preparations).

PUBLIC HEALTH VETERINARY SERVICES AND VETERINARY EDUCATION

MENZIES, D. W. (1953). **The veterinary investigation service.** — *N.A.A.S. Quart. Rev.* No. 20. 329-336. **4173**

M. described briefly the history of the development of the Agricultural Advisory Service of England and Wales which was developed between 1911–1914. Its advisory centres were based on universities and agricultural colleges and approx. 10 years later the first "Veterinary Advisory Officers" to these were appointed. In 1935 their name was changed to "Veterinary Investigation Officer." In 1946 the service was incorporated into the Ministry of Agriculture and affiliated to the Animal Health Division. Its administrative headquarters are at the Veterinary Laboratory, Weybridge; the service is organised on a regional basis, covering England and Wales. Work at regional centres consists mainly of routine examinations of material submitted by veterinary surgeons. Such routine examinations often put the Veterinary Investigation Officer into contact with local problems requiring his investigation. M. discussed briefly diseases and conditions in cattle, sheep, pigs and poultry dealt with at the annual conference in 1953.—E.G.

I. RECEVEUR. (1954). Organisation du service de l'élevage et des industries animales en Afrique équatoriale française. [**Organization of veterinary services in French Equatorial Africa.**]—*Bull. Off. int. Epiz.* **41,** 352-377.

II. JORE D'ARCES, P. (1954). Organisation des services vétérinaires en Algérie. Superficie consacrée à l'agriculture et à l'élevage. [**Veterinary services in Algeria.**]—*Ibid.* 378-382.

III. BUHL. (1954). L'organisation du service vétérinaire dans la République fédérale d'Allemagne. [**Veterinary services in the Federal Republic of Germany.**]—*Ibid.* 383-388.

IV. FEUNTEUN, L. M. (1954). Organisation des services vétérinaires en Afrique occidentale française. [**Veterinary services in French West Africa.**]—*Ibid.* 389-407.

V. VOGLER, M. (1954). L'organisation des services vétérinaires en Autriche. [**Veterinary services in Austria.**]—*Ibid.* 408-416.

VI. Duhaut. (1954). Organisation des services vétérinaires de Belgique. [**Veterinary services in Belgium.**]—*Ibid.* 417-425.

VII. Saphon. (1954). Organisation du service vétérinaire au Cambodge. [**Veterinary services in Cambodia.**]—*Ibid.* 426-431.

VIII. Jeannin. (1954). Organisation des services vétérinaires au Cameroun. [**Veterinary services in French Cameroons.**]—*Ibid.* 432-438.

IX. Nielsen, F. W. (1954). L'organisation des services vétérinaires du Danemark. [**Veterinary services in Denmark.**]—*Ibid.* 439-447.

X. Eddin, S. (1954). Rapport sur l'organisation du service vétérinaire d'Egypte. [**Veterinary services in Egypt.**]—*Ibid.* 448-449.

XI. Huhtala, E. (1954). L'organisation des services vétérinaires en Finlande. [**Veterinary services in Finland.**]—*Ibid.* 450-457.

XII. Merle, A. (1954). Organisation des services vétérinaires de la France Métropolitaine. [**Veterinary services in France.**]—*Ibid.* 458-466.

XIII. Loutsch. (1954). L'organisation des services vétérinaires du Grand-Duché de Luxembourg. [**Veterinary services in Luxemburg.**] —*Ibid.* 467-477.

XIV. Papachristophilou, P. & Tzortzakis, N. (1954). Organisation du service vétérinaire en Grèce. [**Veterinary services in Greece.**] —*Ibid.* 478-484.

XV. van den Born. (1954). Aperçu schématique du service vétérinaire en Hollande. [**Veterinary services in the Netherlands.**]—*Ibid.* 485-492.

XVI. Altara, I. (1954). Organisation du service vétérinaire en Italie. [**Veterinary services in Italy.**]—*Ibid.* 493-504.

XVII. Saito, K. (1954). L'organisation des services vétérinaires au Japon. [**Veterinary services in Japan.**]—*Ibid.* 505-511.

XVIII. Chao-Sinh. (1954). Le service de l'élevage et des épizooties du Royaume du Lagos. Son historique et sa période de réorganisation. [**Veterinary services in Lagos.**] —*Ibid.* 512-525.

XIX. Vaysse, J. (1954). Organisation des services vétérinaires au Maroc. Service de l'élevage et des haras. [**Veterinary services in Morocco.**]—*Ibid.* 526-534.

XX. Aaser. (1954). L'organisation de la fonction vétérinaire en Norvège. [**Veterinary services in Norway.**]—*Ibid.* 535-539.

XXI. Dayus, C. V. (1954). Organisation des services vétérinaires en Nouvelle-Zélande. [**Veterinary services in New Zealand.**]—*Ibid.* 540-546.

XXII. França e Silva, A. E. (1954). L'organisation des services vétérinaires au Portugal. [**Veterinary services in Portugal.**]—*Ibid.* 547-561.

XXIII. Escobal, R. (1954). Organisation des services vétérinaires dans la République Argentine. [**Veterinary services in Argentina.**] —*Ibid.* 562-573.

XXIV. Alegren. (1954). Les services vétérinaires en Suède. [**Veterinary services in Sweden.**]—*Ibid.* 574-594.

XXV. Jaggi & Flückiger, G. (1954). Importance du cheptel et organisation des services vétérinaires en Suisse. [**Veterinary services in Switzerland.**]—*Ibid.* 595-609.

XXVI. Vichitrpahanakar, K. (1954). Quelques aspects de la situation sanitaire et du service vétérinaire au Thailand. [**Veterinary services in Thailand.**]—*Ibid.* 610-615.

XXVII. Muslu, Z. (1954). Les services vétérinaires de la République de Turquie. [**Veterinary services in Turkey.**]—*Ibid.* 616-620.

XXVIII. Dang-Quan-Dien. (1954). Organisation des services vétérinaires au Viêt-nam. [**Veterinary services in Viet-nam.**] — *Ibid.* 620-627. **4174**

I–XXVIII. This series of papers described the government veterinary services of each of 28 member-countries of the Office International des Epizooties. In general, each paper dealt with details of central and regional organization of the veterinary services, the legislation upon which they are based, their history, and their activities. The latter included the control of infectious diseases, accounts of laboratories and institutes, animal breeding and husbandry, meat inspection, and in some cases veterinary education. Most of the papers gave figures for the number of veterinary surgeons and the animal population of the country concerned.

—R.M.

Bressou, C. (1954). Documents pour une étude de démographie professionelle. [**Comparison between livestock population and the number of veterinary surgeons in Europe and North and South America.**]—*Rec. Méd. vét.* **130,** 145-150. **4175**

B. gave tables illustrating the distribution of the veterinary profession in the countries of North, Central and South America, and Western Europe.

The number of veterinary surgeons in each country was compared with the area of the country and the density of its human and animal populations. Actual numbers of the various kinds of livestock were given, but, for convenience in comparison, the grand total for

each country was expressed in "animal units" ("A.U."), where one unit was equiv. to one bovine or equine animal, 3 sheep, goats or pigs, or 100 poultry.

The figures showed the very great differences between the numbers of animals supervised (in "A.U.") and the area covered (in sq. km.) by the av. veterinarian in different countries. The following were among the figures given:— The Argentine 37,920 A.U., 1,746 sq. km.; Canada 9,464 A.U., 7,373 sq. km.; The U.S.A. 7,235 A.U., 489 sq. km.; Uruguay 46,959 A.U., 632 sq. km.; The German Federal Republic 2,987 A.U., 40 sq. km.; Denmark 3,885 A.U., 34 sq. km.; France 6,697 A.U., 145 sq. km.; Gt. Britain 3,933 A.U., 57 sq. km.; Italy 2,966 A.U., 54 sq. km.; Norway 4,530 A.U., 616 sq. km.; Holland 4,331 A.U., 44 sq. km.; Sweden 5,229 A.U., 630 sq. km. The approximate numbers of veterinarians in these countries at the time of publication were:—the Argentine 1,600; Canada 1,350; the U.S.A., 16,000; Uruguay, 296; the German Federal Republic 6,100; Denmark 1,261; France 3,794; Great Britain 4,129; Italy 5,550; Norway 500; Holland 932; Sweden 713. No information was available from Eastern Europe.—A.S.

Vuillaume, R. (1954). La profession vétérinaire au Brésil. **[The veterinary profession in Brazil.]**—*Rec. Méd. vét.* **130,** 36-42. **4176**

An account of the federal veterinary service in Brazil, with emphasis on the pattern of veterinary instruction.

The veterinary school at Rio de Janeiro is part of the new "Universidade Rural do Brasil," and provides a course lasting four years, in which the bias is towards animal husbandry and veterinary work associated with animal production, rather than clinical instruction.

There are in addition seven other schools, at Niteroi in the State of Rio, Porto-Allegre in Rio-Grande-de-Sul, Curitiba in Parana, São Paolo in the State of São Paolo, Belo-Horizonte in Minas Geraes, Récife in Pernambuco, and Bahia in the State of Bahia.

In all of these schools instruction follows the same syllabus as at Rio de Janeiro. A system is under discussion whereby a student, having completed a basic course, will have the choice of specializing in hygiene, animal husbandry, biology, or clinical work. The central "Departamento Nacional de Produção Animal" ("DNPA") of the Ministry of Agriculture comprises five divisions:— the "Divisão de Fomento da Produção Animal," dealing with the development of animal production; the "Divisão da Caça e Pesca," concerned with game and fisheries; the "Divisão de Sanitaria Animal," charged with controlling disease epidemics; the "Divisão de Inspeção de Produtos de Origem Animal," concerned with the inspection of products of animal origin; and the "Instituto de Biologia Animal," which in addition to carrying out research, manufactures biological products for the "DNPA."

Nearly all veterinarians in Brazil are employed by the state, only a hundred or so being in private practice, and a few others in private industrial and agricultural establishments.

—A.S.

See also absts. **4026** (F. & M. disease Committee); **4080** (flies as carriers of tubercle bacilli).

REPRODUCTION AND REPRODUCTIVE DISORDERS

Rowson, L. E. & Murdoch, M. I. (1954). **Electrical ejaculation in the bull.**—*Vet. Rec.* **66,** 326-327. **4177**

Stimulation applied through electrodes made of small copper rings worn on the fingers of a rubber-gloved hand and held on either side of the ampullae by inserting the hand into the rectum has been very successful for electrical ejaculation in the bull. It produces very little general reaction.—A. Ackroyd.

Johnson, A. S. (1954). **Artificial insemination and the duration of fertility of geese.**—*Poult. Sci.* **33,** 638-640. [Author's summary modified.] **4178**

J. described a successful technique for obtaining semen from ganders and for inseminating female geese. Semen production of the ganders used varied considerably. The mean duration of fertility in a limited number of females on trial was 9·7 days.

Bishop, M. W. H., Campbell, R. C., Hancock, J. L. & Walton, A. (1954). **Semen characteristics and fertility in the bull.**—*J. agric. Sci.* **44,** 227-248. [Authors' summary copied *verbatim.*] **4179**

Certain characteristics of bull semen have been examined at four artificial insemination centres in England. One hundred and twenty-one samples of semen, comprising 168 ejaculates from seventy-six bulls of seven breeds, were

examined. The semen from 119 tested samples was subsequently used to inseminate 4,604 cows.

The following semen characteristics were studied: volume of ejaculate; concentration of spermatozoa; incidence of dead spermatozoa; incidence of morphologically abnormal spermatozoa; initial fructose concentration; resistance of spermatozoa to temperature shock; methylene-blue reduction; O_2 uptake; fructose utilization; visual evaluation of motility; impedance change frequency; and fertilizing capacity (conception rate).

A clinical examination was made of the reproductive organs of each bull.

Variations in the concentration of living spermatozoa and in the incidence of dead spermatozoa were found to account for most of the variations in the metabolic activity of semen: they also largely explained differences in physical activity as assessed by visual estimation of motility or by impedance change frequency.

Although the rates of methylene-blue reduction, O_2 uptake and fructolysis showed a close correlation with the numbers of living spermatozoa present, O_2 uptake and fructolysis per living cell decreased with increasing cell concentration.

Variations in metabolic activity showed no correlation with variations in the morphological characteristics of the spermatozoa, except in the case of spermatozoa with bent tails. These forms occurred in some samples as a result of staining treatment, but their incidence was positively correlated with the O_2 uptake and fructolysis per living cell.

There was evidence that highly active spermatozoa are more resistant to temperature shock than less active spermatozoa.

The relationships between fertility and the other semen characteristics differed between centres, but analysis of the total data established a highly significant inverse relationship between fertility and the incidence of dead spermatozoa, and a highly significant direct relationship between fertility and impedance change frequency. There was also evidence of relationships between fertility and resistance to temperature shock, age of bull, volume of ejaculate, fructolysis and methylene-blue reduction. There were significant differences in fertility between breeds; there were no obvious relationships between the palpable characteristics of the genital organs or the libido of the bulls and their fertilizing capacity.

These results provide evidence of a relationship between the physical activity of bull semen and its fertilizing capacity. This activity is determined by the number of living spermatozoa in the semen and their degree of activity, and can be measured by the following tests: determination of concentration of spermatozoa; determination of the incidence of dead spermatozoa; and measurement of impedance change frequency.

The results show that the metabolic tests (methylene-blue reduction, fructolysis and O_2 uptake) add little to the information gained by the three tests mentioned above.

These results were obtained on a selected sample of bulls and the conclusions which have been drawn may not apply to bulls generally.

PRABHU, S. S. & SHARMA, U. D. (1953). **Comparison of four ejaculates collected in rapid succession from the Indian water buffalo** (*B. bubalis*). — *Indian vet. J.* **23,** 273-277. [Authors' summary slightly modified.] **4180**

Four ejaculates taken in rapid succession at weekly intervals from each of 12 buffalo bulls of the type commonly found in Uttar Pradesh were analysed in respect of 5 semen criteria and reaction time.

The results obtained indicated that it is undesirable to take more than 2 ejaculates at a time from buffalo bulls, though in special circumstances depending upon the individual behaviour of the bulls a slight departure from this rule may be made.

GLOVER, T. & MANN, T. (1954). **On the composition of boar semen.** — *J. agric. Sci.* **44,** 355-360. [Authors' summary modified.] **4181**

The authors studied the composition of boar semen, using 20 ejaculates collected from the same boar at weekly intervals, by microscopic and chemical methods. The total volume of ejaculates varied from 240 to 500 ml., and sperm concentration from 50,000 to 177,000 cells/μl. Chemical analysis revealed 2·4–12·6 mg./100 ml. fructose, 5·9–23·1 mg./100 ml. ergothioneine, and 32–156 mg./100 ml. citric acid.

The sequence with which the different parts of boar semen follow one another at ejaculation was studied by the method of fractionate collection. The earliest to be emitted was the 'pre-sperm fraction' from which sperm and seminal vesicle secretion were absent. The next was the 'sperm-rich fraction' which contained also substantial quantities of substances derived from the seminal vesicles, *i.e.*, fructose, ergothioneine and citric acid. The 'post-sperm fraction' consisted mainly of accessory gland secretions.

Analysis of semen fractions collected at very brief intervals revealed that whereas the secretion of the seminal vesicles accompanies the spermatozoa at ejaculation, it attains its max. immediately after the bulk of the sperm has been ejaculated.

SMITH, J. T., MAYER, D. T. & HERMAN, H. A. (1954). **A comparison of the ability of certain egg yolk diluents to maintain optimum osmotic conditions during the storage of bull semen.**—*J. Dairy Sci.* **37,** 684-690. [Authors' summary modified.] **4182**

Semen specimens from healthy dairy bulls were diluted with six diluents, stored at 4° to 7°C., and examined daily for both motility and freezing point depression. The egg yolk-citrate diluter failed to maintain the osmotic pressure of the semen within the range suggested by Pursley and Herman as optimal for semen diluters. The other diluents used in commercial artificial insemination did maintain the osmotic pressure within these limits, and one of these, the egg yolk-glucose–$NaHCO_3$ diluter developed by Kampschmidt *et al.*, maintained the osmotic pressure along the line of mean freezing point depression of semen, and was superior for maintenance of motility during the storage period. The authors suggested that added glucose aids within narrow limits in the maintenance of osmotic pressure during storage and thus may have an influence upon the viability of bull spermatozoa during a prolonged storage period.

ALBERTSEN, B. E. (1953). **The bactericidal effect of antibiotics in semen diluents. (Preliminary report.)** — *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 2. pp. 731-734. Discussion: Part II. pp. 325-329. [In English. French and German summaries.] **4183**

The author introduced his paper [*V.B.* **24,** 267], and gave a table showing the percentage of surviving bacteria (*Corynebact. pyogenes, Br. abortus and Vibrio fetus*) in diluted semen samples which had been stored for 24 hours and to which various antibiotics had been added. He discussed with other speakers the use of antibiotics for this purpose, and also the effect of antibiotics on *Trichomonas foetus* in semen.

—R.M.

AUSTIN, C. R. & BRADEN, A. W. H. (1954). **Time relations and their significance in the ovulation and penetration of eggs in rats and rabbits.**—*Aust. J. biol. Sci.* **7,** 179-194. **4184**

Rats mated under normal colony conditions ovulated between 12.00 midnight and 4.00 a.m. In any one rat ovulation of the first 6 eggs took one hour. Penetration of the eggs by spermatozoa took place 2 to 4 hours after ovulation and pronuclei formed 3 hours after penetration. Under controlled illumination, ovulation began 6 hours after the onset of darkness and lasted 4 hours as in the normal colony.

In the rabbit, penetration by spermatozoa occurred soon after ovulation in mated animals, but in artificially ovulated animals, mated at the time of ovulation, at least 5 hours were necessary before the eggs were penetrated. This period of "capacitation" in the female genital tract is more than twice that required by rat sperm (2 hours).—A. W. BLACKSHAW.

AUSTIN, C. R. & BRADEN, A. W. H. (1954). **Induction and inhibition of the second polar division in the rat egg and subsequent fertilization.**—*Aust. J. biol. Sci.* **7,** 195-210. **4185**

The emission of the second polar body in oestrous rats was induced, in a high proportion of cases, by ether and nitrous oxide anaesthesia. The application of ice to the fallopian tube led to the formation of the second polar body in almost every case.

Induction of second polar body abstriction before the time of penetration by spermatozoa reduced the number of penetrated eggs but did not increase the number of polyspermic eggs. Normal fertilization and cleavage may occur in spite of initial disturbance in the correlation between male and female elements.

Hot shock caused a transitory, and colchicine a prolonged, inhibition of the formation of the second polar body. Hot shock also caused a high incidence (16%) of polyspermy.

—A. W. BLACKSHAW.

BHADURI, J. L. & BARDHAN, N. R. (1953). **Parallel tests with Calcutta and Hebbal (Bangalore) toads for bovine pregnancy.**—*Curr. Sci.* **22,** 20-22. **4186**

The male Hebbal toad reacted positively to urine from 2 pregnant cows and from 17 bulls and non-pregnant cows. It was therefore considered to be unreliable, at least during the period of the experiments, which was May–August. Parallel tests with Calcutta toads gave reliable results.—R.M.

GARM, O. & SKJERVEN, O. (1953). **A simple test for diagnosis of early pregnancy and endocrine changes in the reproductive organs in the cow.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. 770-772. Discussion: Part II. p. 338. [In English. French and German summaries.] **4187**

[See also *V.B.* **24,** 3354.] Discussing this

paper, O. Skjerven stated that the fern-like formation present in the vaginal mucus of cows had not been observed in the vaginal mucus of mares.—R.M.

Seekles, L., Holtz, A. H. & Eikelenboom, C. (1953). **A preliminary report on the excretion of 17-ketosteroids originating from the gonads and from the adrenal cortex in cattle and horses.**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 588-595. Discussion: Part II. p. 297. [In English. French and German summaries] **4188**

In a discussion of the authors' paper [*V.B.* **24,** 1701] two speakers gave the results of their own investigations into the presence of ketosteroids in the urine of cattle.—R.M.

Bengtsson, L. P. (1953). **Studies on the metabolism of acid soluble phosphate in the vagina of the rabbit after a single injection of oestrogenic hormone.**—*Acta endocr., Copenhagen.* Suppl. No. 13. pp. 75. [In English.] **4189**

Thirty ovariectomized rabbits were given a single i/v inj. of 4,000 I.U. oestrone. After from 1 to 16 hours 0·5 millicuries P^{32} was injected s/c. Two hours later the rabbits were killed and the P^{32} and acid-soluble phosphate content of the blood, vaginal mucous membrane, and vaginal muscle was estimated and compared with that of untreated controls. B. found that 2 hours after the administration of oestrone there was an increase in permeability of the cell membrane to phosphates and in intracellular phosphate metabolism.

In similar experiments, the amount of acid-soluble phosphate and water in the vaginal mucous membrane of 20 rabbits similarly treated with oestrone increased, after the drug had acted for 16 hours, by 20% and 27% respectively.

B. concluded that the administration of oestrogen increased energy metabolism and permeability of the cell membrane.—R.M.

Wagenaar, G. & Grootenhuis, G. (1953). **Sterility and sperm examination in stallions.** *Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 2. pp. 726-730. Discussion: Part II. p. 324. [In English. French and German summaries.] **4190**

Discussing the authors' paper [*V.B.* **24,** 282], N. Lagerlöf mentioned his experience of the causes of sterility in stallions.—R.M.

Azizuddin, I. M. (1954). **Studies on the bacteriology and pathology of bovine endometritis. Endometritis—its classification and relationship to sterility.**—*Indian vet. J.* **30,** 376-387. **4191**

The author suspected the possibility of organisms other than *Brucella abortus* and *Trichomonas foetus* causing genital infections and described the technique adopted by him for pathological and bacteriological examination of genital tracts of 231 cows slaughtered at Ayr and Edinburgh. Results were not stated, except that *Corynebacterium pyogenes* grew well and was easily detected on Kerr's medium for *Tr. foetus.*—R. N. Mohan.

Wiggins, E. L., Terrill, C. E. & Emik, L. O. (1954). **The effect of year, breed, age and number of ewes bred on fertility in range rams.**—*J. Anim. Sci.* **13,** 455-463. [Authors' summary modified.] **4192**

The effects of year, breed, age of ram and number of ewes served per ram were studied in 1,109 rams mated to 31,473 ewes from 1936-50 inclusive.

The av. percentages of ewes lambing in different years ranged from 87·9% in 1946 to 93·7% in 1950 (av. for the period 90·7%). No definite trend in fertility was noted over the period studied.

Targhee rams had the highest av. fertility, followed in order by Corriedales, Rambouillets, Columbias and 11 rams of 3 other breeds which were considered as one group. There did not appear to be significant differences in the rams of differing ages and there was no trend in fertility with increasing age. In actual percentages of ewes lambing, 4-year-old rams were highest and were followed in order by 2-year-olds, yearlings, 3-year-olds and ram lambs.

There was no trend in fertility with increasing numbers of ewes up to 50. The av. fertility in pens of more than 50 ewes was slightly lower than in pens of less than 50 but only a relatively small number of rams were mated to more than 50 ewes.

Dutt, R. H. (1954). **Fertility rate and embryonic death loss in ewes early in the breeding season.** — *J. Anim. Sci.* **13,** 464-473. [Author's summary modified.] **4193**

In this study 180 crossbred yearling ewes were paired as they came in heat and each was inseminated with 0·2 ml. of a split portion of undiluted semen. One ewe from each pair was slaughtered 3 days after insemination to determine the ovulation rate, the fertilization rate, condition of the ova and the presence of any structural abnormality which would prevent

fertilization. The remaining ewes were controls and were checked for return to heat and allowed to go to lambing time.

All the 90 ewes in the slaughter group had ovulated; the ovulation rate was 1·47 per ewe and 96·2% of the ova were recovered. Cleavage was evident in 55·1% of the ova. Including both the cleaved and uncleaved ova, 20·5% of all ova were classified abnormal by the third day after insemination. Of the ova in which cleavage had occurred, 14·3% were abnormal as compared with 28·1% of those not showing cleavage.

No structural abnormalities of the reproductive tract which would be a barrier to fertilization were found. Insemination with semen of high quality as judged by motility significantly increased the fertilization and lambing percentages but did not affect the embryonic death rate.

Using the ovulation and fertilization rates from the slaughter group as estimates in the control group, lambs born represented 41·7% of ova recovered, and the embryonic death rate was found to be 32·7%. The reproductive performance of the ewes as a group may be classified as follows: (1) ova not fertilized, 38·9%; (2) death of embryo, 20·0%; and (3) lambed, 41·1%.

Failure of the ova to become fertilised was the most important factor in low lambing rate.

KAUKER, E. & MOSER, K. (1954). Enzootische Eileiterentzündungen des Huhnes. [**Endemic salpingitis in fowls.**]—*Dtsch. tierärztl. Wschr.* **61,** 102-103. **4194**

The authors carried out investigations on 22 poultry farms where there was disease involving inflammation of the oviduct, malaise and the laying of abnormal eggs. The severity of the epidemics varied, but on some farms the incidence was as high as 90%. The condition responded well to individual treatment with sulphathiazole ("eleudron"), given twice daily over 3–5 days. Almost all untreated birds died. The cause was not ascertained; some of the birds were infected with *Salmonella gallinarum*.

—A.S.

HALE, R. W. (1954). **Heritability of chick viability in a White Wyandotte flock.** — *J. agric. Sci.* **44,** 221-226. [Author's summary copied *verbatim*.] **4195**

A short account is given of 7 years' breeding for high and low brooder-house viability in a White Wyandotte flock, in which mortality, to 8 weeks of age in most years, varied from almost 50% in the early years to 10% in the last year (1947). When separate sections of the flock were established, the low-viability section showed consistently greater rearing losses than the high-viability section.

Brooder house viability appeared to have a relatively low additive heritability, when estimated from such of the records as were suitable, the pooled estimate from differences amongst sires' progenies being only about 0·7. There was definite evidence that mortality was affected by the common maternal origin of full sibs, the heritability estimated from differences amongst full-sib progenies of dams mated to the same sire being significantly higher than that estimated from differences amongst the half-sib progenies of the sires.

See also absts. **3992-4000** (brucellosis); **4005** (*V. fetus* infection); **4011** (pleuropneumonia-like organisms in the genital tract of cattle); **4017-4019** (trichomoniasis); **4073** (effect of pregnancy and sex hormones on complement and blood coagulation); **4226** (book, artificial insemination of cattle); **4228** (book, application of genetics to breeding).

ZOOTECHNY

BADRELDIN, A. L. & GHANY, M. A. (1954). **Species and breed differences in the thermal reaction mechanism.**—*J. agric. Sci.* **44,** 160-164. [Authors' summary modified.] **4196**

A total of 50 Egyptian domestic buffaloes, 35 Shorthorn and Shorthorn grade and 29 Egyptian (Baladi) cows of different ages were used to study the thermal reaction mechanism by exposing the animals to direct solar radiation followed by shade. The thickness of the skin was also measured in all animals as it is one of the main factors in heat regulation.

There were species and breed differences in the thermal reactions. Buffaloes were more hyperthermic when exposed to direct solar radiation than either Shorthorn or Egyptian cattle. The Shorthorns were more affected by ambient heat than Egyptian cattle.

The skin thickness of the buffalo was double that of the cattle. In all animals the thickness of the skin increased with age.

The authors suggested that the adaptability of farm animals to tropical and subtropical zones is better assessed under shade and under normal husbandry conditions than by exposing them to direct sunlight.

AYSOY, S. (1953). L'action du climat d'Ankara sur le développement des poils des animaux " chèvres, chats, lapins d'Ankara ". [**The**

influence of climate on the hair of Angora goats, cats and rabbits.]—*Proc. XVth Int. vet. Congr., Stockholm*, 1953. Part I. Vol. 2. 897-900. [In French. English and German summaries.] **4197**

The author discussed climatic factors which may be responsible for the luxuriant growth of the hair of goats, cats and rabbits in Angora. He suggested that this is due to the predominance of electrically negative ions in the air of that region.—R.M.

MITCHELL, M. S. & KOSIN, I. L. (1954). **The effect of controlled ambient temperature on some factors associated with egg laying in turkeys.**—*J. Dairy Sci.* **37,** 186-191. [Authors' summary modified.] **4198**

A temperature and light controlled environment depressed the sustained rate of egg laying in turkeys kept under such conditions from December to August. The rate of lay for the 8-month period was significantly higher in the environment in which temperature fluctuated with day-to-day fluctuations in the outdoor temperature. The "controlled" environment induced broodiness to a greater extent in the hens than did the "uncontrolled environment." The controlled environment also depressed the average egg size but had no effect on the "specific gravity" of the eggs.

DAVIS, L. R., AUTREY, K. M., HERLICH, H. & HAWKINS, G. E., JR. (1954). **Outdoor individual portable pens compared with conventional housing for raising dairy calves.**—*J. Dairy Sci.* **37,** 562-570. [Authors' summary modified.] **4199**

Thirty-two new-born calves were divided equally and placed in individual outdoor portable pens or in a barn with an exercise enclosure during a test covering 2 years. During the second year, half of the calves under each system of management were given inoculations with rumen fluid. The pen calves were placed on a site which was clean the first year and slightly contaminated by older animals the second year. Despite ambient temperatures as low as 9°F., the calves in the portable pens made significantly greater weight gains both years and had fewer coccodia and worm parasites and less diarrhoea than the barn calves. All calves in the barn had respiratory troubles, as compared with only one calf in the pens. One barn calf died from pneumonia following an *Eimeria zurnii* infection. The growth response of calves that were fed rumen fluid did not differ significantly from that of uninoculated calves.

When placed together on pastures at the age of 5 or 6 months, the portable pen calves showed no more susceptibility to coccidia and worm parasites than the calves from the barn and continued to maintain their superior weights.

I. CHESTER, R. D. (1952). **Some problems of beef cattle production.** [Queensland.].—*Aust. vet. J.* **28,** 273-287. **4200**

II. ROSE, A. L. (1952). **Some problems of beef production** [Australia.].—*Ibid.* 288-291. **4201**

III. FRANKLIN, M. C. (1952). **Beef production can be increased in Australia.**—*Ibid.* 292-301. **4202**

I. The author briefly summarized the history of the beef cattle industry in Queensland and discussed some of the problems which require scientific investigation.

From 1890 to 1930, owing mainly to drought, cattle tick, tick fever, and unstable prices, the numbers of cattle fluctuated greatly. Since the 1940's prices have shown a steady increase, meat quality is improving and cattle are being slaughtered at a younger age. Competition with other agricultural pursuits has forced the industry into the less favoured areas where some form of supplementation by means of irrigated pastures, grain crops or green feed crops will be necessary. Normally, growth of cattle in these areas is dependent on seasonal pasture growth, and a beast may take 4 years to reach 1100 lb. live weight.

The development of the "Chilled Beef" trade has given an impetus to the industry and it is fortunate that existing slaughtering points are handy to areas where production can be most readily improved. British breeds of cattle have generally failed to establish themselves in many of the more tropical areas. The Zebu-British cross-bred animal is capable of greater growth rate, but in the 20 years since the Zebu was introduced badly managed breeding programmes have resulted in degeneration of cattle in these areas.

Beef cattle production could be increased by improved rail and road transport facilities, improved pasture and property management (including clearing of the Brigalow scrub), better breeding methods, heavy culling and selection of animals with suitable temperament, improved management, and by greater control of *Boophilus microplus, Siphona* (*Lyperosia*) *exigua* and, in other Gulf country, *Haemonchus contortus.*

II. The beef cattle industry in the Northern Territory of Australia appeared to be static

from 1884 to 1901 but thence increasing immunity to redwater fever resulted in an increase in numbers to 1,060,000 head in the peak year of 1948. Overstocking and inadequate watering facilities along stock routes to Queensland caused heavy losses in the early 1920's.

Cattle "turn-off" has always been less than 10% of the total population. Property subdivision for bulls, breeders, calves, weaners and bullocks, adequate handling facilities and increased disease control will all help to improve the turn-off percentage.

Fertility in this area is largely governed by seasonal conditions, and early or delayed rains often result in heavy calf losses.

The prime essential to ensure greatest returns from increased turn-off is an efficient railway system from Queensland into the Northern Territory. The failure of the wet season in the summer of 1951-52 and the lack of adequate transport to shift young stock resulted in very heavy losses of calves and valuable breeders.

III. Australian beef production can be appreciably, rapidly and permanently increased.

Immediate increases could be effected by earlier fattening and turn-off, improved transport facilities, expansion of fodder conservation, growth of fodder crops and pasture improvement.

Progressive increase in production would result from continual observance of the above points, better drought control and improved stud feeding. Collection of growth data to define the nutritional problems of the beef industry is essential.

Special problems requiring investigation are progeny testing, the mechanics and requirements for drought feeding, protein, phosphorus and vitamin A deficiencies in various areas, fundamental research to determine fodder requirements for production or for survival, breed and strain adaptability to different areas, and the effects of supplementary or complete hand feeding.

Weighing centres have been established in the southern States of Australia to study the performance of beef cattle under existing systems of property management and to try to define problems of production and how best they may be overcome.

Short-term stall-feeding experiments in southern New South Wales in which Hereford steers were "topped-off" for market during late winter showed that the practice could be economically possible.

The ratio of beef and veal production to total cattle numbers emphasizes the importance of Queensland as a breeding State where only 1 ton of beef is produced per 22·6 animals, and of Victoria and South Australia as fattening States where the ratio is 1 ton of beef to every 5 head of cattle.—P. K. Briggs.

I. Whiting, F., Clark, R. D. & Allen, C. E. (1954). **Synthetic estrogen in lambs. I. The effect of diethylstilbestrol on weight gains and carcass grades of feeder lambs.**—*Canad. J. agric. Sci.* **34,** 288-291. **4203**

II. Ellis, P. J., Allen, C. E. & Whiting, F. (1954). **Synthetic estrogen implants in lambs. II. The diethylstilbestrol content of treated lamb tissues.**—*Ibid.* 292-298. **4204**

I. In treated lambs there was increased live wt. gain, lower dressing percentage and higher moisture content in round and rib sections, than in the controls. The increased wt. was due to higher moisture content and greater proportion of offal.

II. The residual oestrogen content in 100 g. tissue from feeder lambs implanted with 12 mg. pellet of diethylstilboestrol 15 weeks previously did not exceed 7·1 μg. in kidney, 2·8 μg. in shoulder muscle and 4 μg. in liver tissue. —Thomas Moore.

Bell, T. D., Smith, W. H. & Erhart, A. B. (1954). **The effect of stilbestrol upon lamb performance in the feedlot.**—*J. Anim. Sci.* **13,** 425-432. [Authors' summary modified.] **4205**

S/c implantation of a 15 mg. pellet of stilboestrol at the beginning of the feeding period increased significantly the rate of gain in lambs being fattened on various Kansas rations. Lambs given a second implant after 70 days of feeding did not gain any faster than those given only one implant. Carcass grades and dressing percentages were slightly lower in the treated lambs than in the untreated ones.

Twelve lambs died (of the 517 in the tests) from prolapse of the rectum and from excessive swelling and inflammation in the rectal or perineal region, or showing symptoms similar to those produced by urinary calculi; all these had each received two 15-mg. implants. Virtually all the treated lambs, including those receiving only one pellet, had preputial swelling and apparent distress during urination. Many of the treated lambs had visible swelling in the perineal region.

Clegg, M. T. & Cole, H. H. (1954). **The action of stilbestrol on the growth response in ruminants.** — *J. Anim. Sci.* **13,** 108-130. [Authors' summary modified.] **4206**

The authors studied the effects of stilboestrol implants on rate of gain, economy of

food utilization, endocrine weights, growth hormone and A.C.T.H. content of the pituitary, endocrine gland histology, nitrogen retention and differential blood counts in cattle and in lambs, using approx. 340 treated animals and a corresponding number of controls. In some trials the animals were maintained on irrigated pasture with and without supplements; in others they received hay and concentrates. Treated steers in the fattening pens or on pasture with supplementary concentrates made greater gains than controls, or than treated steers on pasture alone. The growth response of treated heifers in the fattening pen was less marked than that of treated steers. On pasture, treated heifers made no increase in gain over controls. Food consumption and economy of food utilization was increased in all treated animals. The growth response in wether and ewe lambs on pasture was greater with a dose of 12 mg. than with 24 mg. of stilboestrol. Nitrogen retention was almost doubled in steers following stilboestrol administration. The weights of the pituitary and adrenal glands were significantly larger in the treated animals. Thyroids of treated steers were larger but not significantly. In treated heifers the thyroid weight was significantly depressed. Ovarian weight was not altered after treatment, but formation of corpora lutea was depressed. Growth hormone and A.C.T.H. content of treated steer pituitaries did not differ significantly from controls. The hypophysis of treated heifers contained twice as much growth hormone as the untreated. In wether and ewe lambs there was a marked eosinopenic response following treatment. The percentage of treated animals in the higher carcass grades was less than the percentage of untreated. The predominant signs of treatment were masculinization and mammary gland development. Several cases of vaginal prolapse occurred in implanted heifers. The authors discussed the role of the pituitary in mediating the growth response to stilboestrol.

Jones, O. & Deatherage, F. E. (1953). **The diethylstilbestrol content of the meat from chickens treated with this oestrogenic substance.**—*Food Res.* **18,** 30-34. **4207**

The authors described a colorimetric method for estimating stilboestrol in extracts of liver, muscle, and abdominal fat. No significant amounts of stilboestrol were detected in the liver, muscle, or fat of 10 cockerels which had received s/c implantations each of 15 mg. diethylstilboestrol 31 days previously.—R.M.

TECHNIQUE AND APPARATUS

Pirozok, R. D., Mochrie, R. D. & Helmboldt, C. F. (1954). **A method of reproducing teat topography (structure) for evaluation of teat erosion.** — *Amer. J. vet. Res.* **15,** 140-142. [Authors' summary slightly modified.] **4208**

To facilitate research on factors suspected of causing teat erosion, the authors described a method for making casts before and after a teat has been experimentally subjected to a stimulus which might be a factor in causing erosion.

See also absts. **4047** (propagation of Venezuelan equine encephalomyelitis virus in human uterine tissue); **4186** (a pregnancy test in cattle using male Calcutta toads).

MISCELLANEOUS

Pezzoli, G. & Bignozzi, L. (1954). Sindesmoplastica transarticolare a cura di una disinserzione del legamento crociato anteriore del ginocchio in un cane. **[Surgical treatment of rupture of the anterior cruciate ligament of the stifle joint in a dog.]** — *Nuova Vet.* **30,** 105-114. [French and German summaries.] **4209**

In a case of lameness in a dog caused by rupture of the anterior cruciate ligament of the stifle joint, the authors attached a strip of fascia to the femur at one end and to the tibia at the other end, so that it served as a functional substitute for the ruptured ligament. They reported that the dog made good use of the limb 100 days afterwards.—R.M.

Rob, C. (1954). **Preservation and transplantation of human tissues.**—*Lancet.* **267,** 255-258. [Author's conclusions slightly modified.] **4210**

If one accepts the definition that a graft is a transplant of tissue which forms a permanent living union with the host, then one must conclude that—with the certain exception of identical twins and the possible exception of the cornea—a successful homologous graft has yet to be achieved.

Nevertheless useful results may be obtained

with homologous transplants of arteries, bone, cartilage, cornea, the skin, and even the kidney. It is important to recognise that the response to homologous tissue transplantation varies both with the tissue or organ transplanted and with the species of animal.

Autogenous transplants can be made to take and survive permanently as true grafts. Certain aspects of autotransplantation in patients have been neglected.

Tissues may be stored in a variety of ways. Cell survival can be expected for a period of up to 8 weeks after storage at 0°–4°C in a nutrient medium. A better method is to store in glycerol saline at −79°C or lower when long survival is possible. When cell survival is unnecessary, storage may be in the frozen state or by freeze-drying; both allow almost permanent preservation but freeze-drying is the more convenient.

REPORTS

GREAT BRITAIN. (1954). **The Edinburgh and East of Scotland College of Agriculture. Report for the year ending 30th September 1953.** pp. 142. Edinburgh: The College. **4211**

The College, which was instituted in 1901, serves 11 counties. The staff comprises 36 lecturers and assistants, and also numerous specialist officers who act in an advisory capacity. Amongst the last named are the veterinary investigation officers.

The veterinary service is now considered to be an integral part of veterinary practice in the area, judging by the use made of it by practising veterinary surgeons. The staff is utilized in a consultative capacity and operates a laboratory for routine diagnostic and research work.—D. S. RABAGLIATI.

GREAT BRITAIN. (1953). **The West of Scotland Agricultural College. Report on the work of the College for the year ended 30th September 1953.** pp. 59. Stirling: Jamieson & Munro Ltd. **4212**

The general work of the College shows a steady progress; the total number of individual students attending the several courses was 721 against 714 in the previous year.

In the college herd, with 79 lactations completed, the av. milk yield was 1,101 gal. at 3·76% butter fat in 303 days, while the annual production per cow was 924 gal.

A start was made on the new buildings for the Veterinary Investigation Service. The routine diagnostic service carried out by this service was widely used by the veterinary practitioners in the college area.

The various diseases encountered are listed and special investigations were carried out on helminthology at Lephinmore Hill Farm. BRACKEN POISONING, HYPOMAGNESAEMIA in cattle, *Nematodirus* in lambs, and PARASITIC GASTRO-ENTERITIS in heifers and wethers were among the conditions studied.

—D. S. RABAGLIATI.

I. INDIA. GOVERNMENT OF MADHYA BHARAT. **Annual report of the Veterinary and Animal Husbandry services for the year 1948-49.** [MEHRA, H. K.] pp. 10. Gwalior: Govt. Central Press. **4213**

II. INDIA. GOVERNMENT OF MADHYA BHARAT. **Annual report of the Veterinary and Animal Husbandry services for the year 1949-50.** [MEHRA, H. K.] pp. 60. Gwalior: Govt. Central Press. **4214**

III. INDIA. GOVERNMENT OF MADHYA BHARAT. **Annual report of the Veterinary and Animal Husbandry services for the year 1950-51.** [MEHRA, H. K.] pp. 68. Gwalior: Govt. Central Press. **4215**

I. Eleven princely States in Central India now constitute Madhya Bharat, possessing 0·7 million cattle with average density of 78/100 acres cultivated. Veterinary dispensaries totalled 105. Diseases diagnosed in laboratory include ANTHRAX, BLACKLEG, RINGWORM, SURRA and PIROPLASMOSIS. Over 0·2 million cattle were immunized against RINDERPEST with goat spleen vaccine prepared in Gwalior.

II. The 21 hospitals and 119 dispensaries treated 425,215 animals. Inoculations done were 338,935 against RINDERPEST and 13,489 against other diseases. Castrations performed were 44,349. The laboratory at Gwalior was reconstituted into the Vaccine and Research Institute. It examined 1,905 specimens, and prepared 455,700 doses of RINDERPEST vaccine and 3,000 doses of HAEMORRHAGIC SEPTICAEMIA vaccine. The two State farms had 190 Malvi cattle.

III. Fifteen new dispensaries were added. The doses of vaccine prepared were—RINDERPEST 873,500 and HAEMORRHAGIC SEPTICAEMIA 72,050, besides 4,474 of HAEMORRHAGIC SEPTICAEMIA serum. There was a severe outbreak of RINDERPEST in sheep and goats. Two field strains of *Pasteurella septica* were isolated. Pathological specimens examined included 48 of HORN CANCER. *Balantidinum coli* was associated with chronic DYSENTERY in a horse.

—R. N. MOHAN.

REPUBLIC OF IRELAND. (1954). **Twenty-second Annual Report of the Minister for Agriculture, 1952/53.** pp. 89+vi. Dublin: Stat. Off. 8s. 6d. **4216**

At the opening of the Veterinary School at the term 1952-53, there were 207 students attending, including 40 freshmen. In the laboratory, 2,380 specimens were examined.

In the meat bacteriological section of the College the primary work was a detailed bacteriological, chemical and physiological examination of samples of canned and other packed meat products.

In the clinical dept. 7,827 patients were treated, of which 833 were horses and 4,859 dogs.

Experiments showed that there is no advantage in adding antibiotics to a well-balanced ration for healthy pigs, but further tests are being made on such an addition in the case of unthrifty pigs.—D. S. RABAGLIATI.

BOOK REVIEWS

SMITH, E. C. & KIRK, R. [Revised by]. (1953). **An introduction to pathology and bacteriology for medical students in the tropics.** pp. xv+390. London (& New York): Staples Press. 2nd Edit. 50s. **4217**

This book is designed for students of medicine, and concisely states the principles of pathology, bacteriology and virology with special, but not exclusive, reference to tropical diseases. This tropical bias is particularly noticed in the chapters dealing with diseases caused by fungi, spirochaetes, viruses, rickettsia, protozoa, and helminths. Techniques of P.M. examination, histological staining and culture media are briefly described in appendices. There are 18 coloured plates and many photographs; the paper and the layout are excellent.—R.M.

LEAVELL, H. R. [Professor of Public Health, Harvard School of Public Health.] & CLARK, E. G. [Professor of Epidemiology, School of Public Health and the Faculty of Medicine, Columbia University.] (1953). **Textbook of preventive medicine.** pp. xviii+629. New York, Toronto & London: McGraw-Hill Book Co., Inc. $8.00. 64s. **4218**

This book is written strictly from the point of view of the prevention of disease in human beings. There are 18 chapters, each in the nature of an essay, contributed by different authors, and there are some references to diseases of man transmitted by animals.

The authors stress the importance of considering the health of the individual against the background of the social or occupational group to which he belongs.

There are chapters on occupational health, the prevention of infectious disease, nutrition in preventive medicine, health screening, prenatal care, and the health services of the U.S.A.—A.S.

BUCHNER, P. [Vormals o.ö. Professor an der Universität Leipzig.] (1953). Endosymbiose der Tiere mit pflanzlichen Mikroorganismen. **[Relationships between animals and their endosymbiotic microflora.]** pp. 771. Basle/Stuttgart: Verlag Birkhäuser. Swiss Fr. 62.40 or 66.50. (DM 62.40 or 66.50.) **4219**

In this well produced and generously illustrated book the author, a distinguished German zoologist, reviews the progress of the last twenty years in the field of symbiotic relationships between members of the animal kingdom, and the algae, bacteria and fungi which live within them.

After a thorough historical introduction he deals separately with the various animal orders in which endosymbiotic microflorae have been described, treating these host orders in groups based on whether they feed on plant juices, blood, horny substances, food rich in cellulose, and so on.

The last third of the book is given over to general chapters on metabolic relationships, the evolution of symbiosis, and the nature of endosymbiosis.—A.S.

DUJARRIC DE LA RIVIÈRE, R. & EYQUEM, A. (1953). Les groupes sanguins chez les animaux. (Individualités sanguine et tissulaire.) **[Blood groups in animals.]** pp. 407. Paris: Les Éditions Médicales Flammarion. Fr. 3275. **4220**

The pace of research on animal blood groups is increasing markedly. For this reason the review of Dr. Dujarric de la Rivière and Dr. Eyquem is most welcome now. For this reason too, the book will need frequent revision if the latest work is to be included.

Of 355 pages of matter only 89 are devoted directly to an account of animal blood groups; an admirable summary in which, however, more stress might have been laid on the need for exchange of antisera (freeze-dried) between workers in different countries on the blood-grouping of any one species if our knowledge is to be coherent and cumulative.

A short section is devoted to haemolytic disease of the new-born, and more than 50 pages

to a short survey of human blood-groups and their genetics, together with an elementary account of general genetical principles. An important section of 53 pages deals with serological techniques and this provides the information necessary to raise blood-grouping studies above the level of mere agglutination of large numbers of samples. By far the largest section of the book is devoted to tissue antigens and cytotoxic antibodies.

Apart from a few minor slips (*e.g.* Stratton discovered D^u in 1946, and not Race *et al.* in 1948) and misprints, this is a most valuable account; it follows a maddening French tradition of not always quoting in the bibliography the references to papers which are discussed fully in the text.—G. FULTON ROBERTS.

—. (1954). **Metabolic interrelations with special reference to calcium. Transactions of the Fifth Conference, January 5-6, 1953, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: REIFENSTEIN, E. C., JR.] pp. 386. New York: Josiah Macy, Jr. Foundation. $5. **4221**

It would be very pleasant if the reports of European conferences could be made available at cost price in publications as well produced as this. The book is lavishly supplied with photographs and diagrams, and has a *verbatim* report of the proceedings, which throws an informative light on the interplay of scientific personalities renowned in their particular fields.

This is a book for the specialist in the biochemical or physiological world, but papers of interest to the veterinary profession are:— The effect of vitamin D on calcium and phosphorus solubility in serum, Renal clearance of calcium in normal dogs, Adaptation to low calcium intakes, Intake of calcium and phosphorus required for bone growth, Diseases of bone associated with derangements of calcium and phosphorus metabolism, and The effect of intravenous parathyroid extract on a parathyroidectomized dog.— D. S. PAPWORTH.

KARPOVICH, P. V. [Professor of Physiology, Springfield College, Springfield, Massachusetts.] (1953). **Physiology of muscular activity.** pp. xv+340. Philadelphia & London: W. B. Saunders Co. 4th Edit. [Demy 8vo.] 24s. **4222**

This book is intended—as in the earlier editions—for students of physical education; it can also be recommended to anyone interested in the physiology of exercise in man or animals. The application of physiology to the problems of mankind such as boredom, staleness, old age, and convalescence are discussed, and finally much of the "folk lore" of athletic training is exposed in a chapter dealing with genuine or reputed aids to muscular activity. Two new chapters dealing with the nervous control of muscular activity and the energy expenditure of different activities are included. The text of this edition has been revised or rewritten by Professor P. V. Karpovich who has succeeded in maintaining the original purpose of the book as written by Dr. Schneider.—A. T. PHILLIPSON.

—. (1953). **Standard methods of clinical chemistry. Vol. I. By the American Association of clinical chemists.** [Editor - in - Chief: REINER, M.] pp. xii+142. New York: Academic Press, Inc. $4.50. **4223**

This volume is a successful attempt to present the methods used every day in the clinical laboratory. The publishers intend to issue similar small volumes in order to keep the methods used up to date and to increase the ground already covered by this edition.

Each technique described is considered the best for normal routine accuracy, and has been checked by at least one laboratory other than that presenting the choice of assay.

Methods are given for amylase, bilirubin, calcium, carbon dioxide, chloride, cholesterol, creatine, glucose, lipase, phosphate, protein, prothrombin, sodium, potassium, thymol, and uric acid.—D. S. PAPWORTH.

—. (1954). **Annual review of biochemistry. Vol. XXIII.** [Edited by: LUCK, J. M., LORING, H. S. & MACKINNEY, G.] pp. ix+636. Stanford, Calif.: Annual Reviews, Inc. $7.00. **4224**

The task of a reviewer faced with the review of a long-proven and successful book is never easy. The murmuring of commendatory platitudes with a seasoning of minor criticisms is hardly a practicable proposition, and does not perform the services of a good review for authors, publishers and readers. Suffice it to say that in style, presentation, and quality of subject matter this volume resembles its forerunners.

The preface deserves some attention, emphasizing as it does the necessity for the scientific man, as for weaker mortals, to express himself in the Queen's English. The prefatory chapter is an autobiography by Dr. Karl Thomas, and subsequent chapters review biological oxidations, proteolytic enzymes, carbohydrates, nucleic acids, carbohydrate metabolism, proteins, peptides, amino acids, vitamins,

nutrition, cancer, hormones, clinical applications, mineral metabolism, thyroid hormones and iodine metabolism, metabolic antagonists, and non-oxidative and non-proteolytic enzymes.
—D. S. PAPWORTH.

ANON. (1953). **Biochemical preparations. Vol. III.** [Editor-in-Chief: SNELL, E. E.] pp. viii+128. New York: John Wiley & Sons, Inc. (London: Chapman & Hall, Ltd.) 28s. **4225**

This volume is similar to the two earlier publications devoted to specialized preparations in the biochemical laboratory. It will therefore be a book for the skilled specialist.

Preparations covered by the book are crystalline muscle phosphorylase, ribonuclease, DPN (diphosphopyridinenucleotide), TPN (triphosphopyridinenucleotide), pyridoxamine phosphate, pyridoxal phosphate, protoporphyrin dimethyl ester, d-isocitric acid, dl-isocitric acid lactone, dihydroxyfumaric acid, oxalacetic acid, L(+) and D(−) lactic acids, sodium α-ketoisocaproate, D–glucose-6-phosphoric acid, D-galacturonic acid, β-2,5-dihydroxyphenyl-DL-alanine, L-isoleucine, D-isoleucine, L–alloisoleucine, D–alloisoleucine, L and DL–ornithine monohydrochlorides, L and DL citrulline, L–kynurenine, L and D–penicillamine hydrochlorides, elaidic acid, 2,4–dinitrofluorobenzene.—D. S. PAPWORTH.

KÜST, D. [Professor Dr. med. vet.] & SCHAETZ, F. [Dr. med. vet. habil.] (1954). Die Besamung beim Rind. Leitfaden für die tierärztliche Praxis. **[Artificial insemination of cattle.]** pp. viii+149. Stuttgart: Ferdinand Enke. DM 17.50 & 19.50. **4226**

This is a well-produced book of 150 closely-printed pages, of which, besides the two editors, four other collaborators have written a large proportion. Each aspect is dealt with in succession with typical German thoroughness. An excellent schema of contents simplifies the reviewer's task; the lists of equipment required for different types of station are well thought out, and there is a chapter on mistakes likely to be made in technique, which faces the facts and shows an understanding of human nature. The veterinary surgeon is evidently right at the heart of the enterprise in Germany and routine early pregnancy diagnosis *by him* is recommended as an essential practice.

In general the writing appears unduly dogmatic in tone; a bare half-dozen references are quoted, in the text only. Less than a page is given to deep freezing of semen, which is considered an "interesting curiosity", while the great extent of the space devoted to the scrutiny of bull pedigrees for lethal genetic defects seems to show a lack of balance.

The chapter on semen collection contains serious errors and omissions; the urethral fistula is alleged to have been successful only with the horse and electric stimulation only with the ram. The valuable French contributions on this aspect also receive no mention. Trial on virgin heifers of a bull suspected of transmitting vibriosis is not regarded as essential or even important.

The latter part of the book is a text on infertility in the light of the editors' extensive experience, and is highly interesting, but too "viewy".—F. L. M. DAWSON.

BRIMLEY, R. C. & BARRETT, F. C. (1954). **Practical chromatography.** pp. 128. London: Chapman & Hall, Ltd. 2nd impression. 15s. **4227**

This book provides a concise and readable introduction to the techniques of chromatography. Each section has a historical introduction followed by references to subsequent methods, and the book is supplied with plenty of clear and useful diagrams.
—D. S. PAPWORTH.

KAPPERT, H. [Direktor des Instituts für Vererbungs- und Züchtungsforschung der Technischen Universität Berlin-Charlottenburg.] (1953). Die vererbungswissenschaftlichen Grundlagen der Züchtung. **[Application of genetics to the breeding of plants and animals.]** pp. vii+335. Berlin & Hamburg: Paul Parey. [Medium 8vo.] DM 22 & 25. **4228**

This is a well produced work written with the intention of providing German students with a single book covering the genetical principles underlying the methods of plant and animal breeding. There is a tendency to concentrate on the plant kingdom, but this is natural because plants, as a result of the great number of their progeny and the possibility of self-fertilization, have always proved the simplest material for experiments on heredity. The book is very clearly laid out in such a way as to facilitate study and revision.—A.S.

HOUSTON, W. V., NOYES, W. A., JR., STERN, C., GREGG, A. & CAMP, W. H. (1952). **The scientists look at our world.** pp. 147. London: Geoffrey Cumberlege, Oxford University Press. $3.00. **4229**

This book contains the five Benjamin

Franklyn lectures delivered at the University of Pennsylvania in 1951. The idea behind these lectures was to present the extent of progress in certain of the important sciences, to stress the interdependence of the various fields of research, and to bring out the position of the scientist in modern society.

The papers were:—"Description of the physical world", by W. V. Houston; "The varied uses of chemistry", by W. Albert Noyes, Jr.; "Genetics and the world today", by Curt Stern; "Plant sciences today", by Wendell H. Camp; and "The true outwardness of medicine", by Allen Gregg.—A.S.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BRAUN, W. (1953). **Bacterial genetics.** pp. xii + 238. Philadelphia (& London): W. B. Saunders Co. 32s. 6d.

CALVERLEY, E. T. (1953). **How to be healthy in hot climates.** pp. vi + 286. New York: Thomas Y. Crowell Co. 2nd Edit. $3.50.

CONANT, N. F., SMITH, D. T., BAKER, R. D., CALLAWAY, J. L. & MARTIN, D. S. (1954). **Manual of mycology.** pp. xii + 456. Philadelphia & London: W. B. Saunders Co. 2nd Edit. 32s. 6d.

FRANCIS, G. E., MULLIGAN, W. & WORMALL, A. (1954). **Isotopic tracers. A theoretical and practical manual for biological students and workers.** pp. xvi + 306. London: University of London; The Athlone Press. 37s. 6d.

FRANKE, H. (1954). Phasenkontrast-Hämatologie. [**Phase-contrast haematology.**] pp. 75. Stuttgart: Georg Thieme. DM 9.60.

FROBISHER, M., JR. (1953). **Fundamentals of microbiology.** pp. xxi + 633. Philadelphia (& London): W. B. Saunders Co. 5th Edit. 30s.

GOERTTLER, V. & WEBER, E. (1954). Bovine Tuberkulose als Ursache humaner Tuberkulose. Zusammengestellt aus dem internationalen Schrifttum bis 1952. [**Bovine TB. in man.**] pp. 51. Stuttgart: Ferdinand Enke. DM 6.

IRVINE, K. N. (1954). **BCG and vole bacillus. A practical handbook.** pp. 96. London: National Association for the Prevention of Tuberculosis. 12s. 6d.

JENKINS, G. L., CHRISTIAN, J. E. & HAGER, G. P. (1953). **Quantitative pharmaceutical chemistry.** pp. x + 534. New York (Toronto & London): McGraw-Hill Book Co., Inc. 4th Edit. 52s.

KIRK, H. (1954). **Index of treatment in small-animal practice.** pp. vii + 888. London: Baillière, Tindall & Cox. 3rd Edit. 45s.

LEAHY, J. R. & BARROW, P. (1953). **Restraint of animals.** pp. xv + 269. Ithaca, N.Y.: Cornell Campus Store. 2nd Edit.

LISON, L. (1953). Histochimie et cytochimie animales. Principes et méthodes. [**Principles and method of animal histochemistry and cytochemistry.**] pp. vi + 607. Paris: Gauthier-Villars. 2nd Edit. Fr. 3800.

MANN, T. (1954). **The biochemistry of semen.** pp. xiv + 240. London: Methuen & Co., Ltd. (New York: John Wiley & Sons, Inc.) 16s.

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